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UNIFORMITY AND CO-OPERATION IN THE CENSUS METHODS OF THE REPUBLICS OF THE AMERICAN CONTINENT.*

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To the United States of America belongs the unique distinction of having inaugurated the decennial census of national population and resources. The census of the population was ordained by the Constitution in 1790, and for every tenth year thereafter, as long as the nation shall endure.

A census was necessary as a basis for Congressional apportionment, and no other reason was assigned for it in the Constitution. But it quickly dawned upon the statesmen of that formative era that apportionment, while an imperatively essential reason for the census, to determine the geographical readjustment of political power in a government founded upon the democratic principle, was only one of many purposes this decennial stock-taking could be made to serve. With successive decades, new lines of enumeration were added,—agriculture in 1820, manufactures in 1840, other inquiries at following decades,—until the census became the periodical inventory of the national resources and the barometer of national development, in every phase and branch,—in human beings first, for the quality and character of its citizenship must always remain the most important national asset; after that the measurement and the differentiation of progress in every field where human energy finds play in the making of a nation. Thus the American census has become as essential, for definite knowledge of our national assets and liabilities, as the periodical book balancing of a business corporation in determining its solvency.

* Address read at the recent Scientific Congress of American Republics at Santiago, Chile.

So understood, the decennial census becomes the most important, useful, and productive undertaking of the federal government. As showing its relationship to the whole problem of modern government, the United States no sooner obtained a temporary responsibility in Cuba than it ordered a census, and the first step taken to re-establish civil government in the colonial possessions acquired by the war with Spain was the census of Porto Rico and the Philippine Islands.

To this day we remain the only nation in the world which has grasped the possibilities and the advantages of enumeration by the census method. Germany has followed our example in adding agricultural statistics to the population count, and, within a limited scope, industrial statistics as well. So have Belgium and Holland, and France to some extent. England, for the first time, is at this moment engaged in taking a census of her manufactures, modelled almost entirely upon the American plan. Other nations have similar enlargement of census work under legislative consideration. But it remains the fact that the United States has discovered the full possibilities of the census; and upon that fact rests the claim that the American census system is the model which the South American republics can best follow.

Many censuses had been taken before our first count in 1790, by many nations. The fundamental idea is as old as civilization itself. But that primitive census of 1790 was the first instance in history, so far as can be ascertained, in which the need for *periodical* enumerations at definitely fixed intervals was recognized and provided for.

Unless established on the basis of *regular recurrence*, the census accomplishes only one-half of its full purpose. All civilization is in a state of flux. The elements comprising it advance and recede in harmony with no known law, with varying momentum in different countries, and in the same countries at different periods. To know where a country stands, from time to time, with respect to itself and with respect to other countries, we must know the measure of these variations. Without this knowledge we cannot diagnose their causes. Hence periodical

enumeration is vital, wherever a national entity exists, if that nationality is to claim and maintain its proper place in the cosmos of nations. This has always been important. Before the twentieth century shall have reached its first quarter mile-post, it will be universally recognized as the most important economic and sociological knowledge that any nationality, be it big or little, can possess concerning itself.

England, Denmark, and Norway were quick to recognize the significance of the periodical enumeration, after the United States had set the example. In 1801 each of these countries followed the example of the youngest of the nations, and has followed it ever since. It seems curious to us, who have ten times in a century readjusted representation in Congress, that England, with a decennial enumeration by which to determine exact apportionment, still fails to accept the actual population, or some definitely determined group of population, as the basis for parliamentary representation.

But to England must be assigned one achievement, in census taking, unequalled in value and in magnitude,—an achievement which no other nation is likely to equal. She has ordained the decennial census, simultaneously with her own, in every colony and principality over which the British flag floats. And so we have had a census of Canada since 1825; of the Australian commonwealths from various dates, according to the degree of their development, beginning with New South Wales in 1821; and, most marvellous of all, since 1872, of the Empire of India, with its population of 250,000,000 people of hundreds of dialects and races. This latter is the most difficult and splendid achievement in census taking of which history makes record.

France took her first regular census in 1800, but not until 1831 did that nation provide for its periodical recurrence. In that year France established the quinquennial enumeration, and she has since enforced a five-year count of the people. Thus we may assign to France a service to the science of census taking only second to that of the United States and Great Britain. For the one certain thing is, in the increasing complications of human society and the increasing tendency of the

races to shift and intermingle, that the five-year enumeration of the population will be demanded. Decennial enumerations are not frequent enough to meet the requirements of science, and particularly that branch which concerns the people more directly than any other,—vital statistics. It has come to be understood that among the first duties—perhaps the very first—of a government to the people whose welfare is in its keeping is their sanitary and hygienic protection; and this duty cannot be effectively performed without the intensive knowledge of the people which only a census affords.

The movement for five-year censuses is making steady headway in England, and will ultimately prevail. In our own country, Congress ought to encourage the several states to take the midway census of population, for which thirteen of these states already provide, by contributing a fair proportion of the cost.

In 1810 Prussia took a population census; and with the establishment of the German Empire, in 1871, began the periodical census of all the kingdoms and states comprised in the empire, along uniform lines, and this has since continued. Like France, Germany takes her census every five years; and Austria completes the roll of the nations which occupy this advanced ground. We shall come abreast with them when we realize that it is worth more than it costs.

I present, in the form of an appendix, a table showing the first and last censuses taken in each of the countries of Europe, Asia, and North and South America, and the population recorded at each. The table also indicates which censuses are periodical and which are irregular, and therefore desultory and of only temporary value. The table shows that populations aggregating 700 millions are periodically enumerated, and that other populations aggregating 300 millions have been enumerated once or twice, at irregular intervals. It permits an estimate, more or less uncertain, that the remaining unenumerated population of the globe is 700 millions.

Thus it appears that the census is spreading slowly around the world, and that 900 more millions of people have been definitely counted than was the case at the opening of the nineteenth century.

The countries of the globe have thus divided themselves into three groups,—those which take no census at all, those which take a census at irregular intervals, and those which take a census at five or ten year periods. I do not undertake to say that the degree of the effectiveness of its civilization is indicated by the group in which each country is located: that would be an arbitrary dictum which other facts will not support. But the nations which desire to be regarded, by a standard which will ultimately be accepted as quite exact, as ranking among the progressive nations, must ultimately align themselves in the last group. It is not without significance that the great nations that have taken no regular enumeration—meaning the nations which are great in territorial extent and aggregations of people—are China and Turkey, and that the great nation which has taken but one census is Russia.

Coming now to Central and South America, I submit a table which shows the dates at which the several republics have taken censuses, so far as I have been able to obtain them. The Bureau of American Republics has been of much assistance in the compilation of this table:

CENTRAL AMERICA.

Country.	*Dates at which censuses were taken.*
Costa Rica	1826, 1892, and 1907.
Guatemala	1880, bureau of statistics organized which issues an annual statement of the population, called *censo*.
Honduras	1881, 1887, and 1905.
Nicaragua	1895, 1906.
Salvador	1901, only census.
British Honduras	1870, 1881, 1891, and 1901.

SOUTH AMERICA.

Argentine Republic	1869, 1895, and 1905.
Bolivia	1831, 1835, 1845, 1854, 1882, and 1900.
Brazil	1872, 1890, and 1900.
Chile	1835, 1865, 1875, 1885, 1895, 1900, and 1905.
Colombia	1870, only census.
Ecuador	Only census ever taken that of city of Quito, May 1, 1906.
British Guiana	1850, 1871, 1881, and 1891.
Dutch Guiana	
French Guiana	
Paraguay	1873, 1887, and 1899.
Peru	1876, only census.
Uruguay	1852 and 1860. Bill now pending provides for a regular enumeration.
Venezuela	1873, 1881, 1891, and 1894.

Chile was the first of the South American republics to recognize the need for the periodical census, which she has periodically taken since 1865.

The Argentine Republic took a census in 1869, and then, after a lapse of sixteen years, began decennial enumerations in 1895, the third of which should follow in 1915. A growth of nearly 200 per cent. was revealed between the first and the last of these Argentine censuses. The landmarks from which to measure the marvellous development awaiting that garden spot of the southern hemisphere are definitely established. Brazil's first census was taken in 1872, and the second in 1890. The third, in 1900, revealed that the population had practically doubled in eighteen years. Nowhere in the world is the need for periodical enumerations more obvious and urgent than in these two empire republics of South America.

Ecuador and Dutch Guiana have never taken a census. Nicaragua and Salvador in Central America, and Colombia and Peru in South America, have taken but one census each, one republic in 1870, and the other in 1876,—more than thirty years ago.

Uruguay has taken no census since 1860, but a bill is now pending in her chambers to provide for periodical enumerations hereafter. Venezuela has taken four censuses, but at irregular intervals, 1894 being the last. Paraguay has taken three censuses, but at intervals so irregular that they furnish no definite basis by which to measure the rate of growth.

The facts last stated are not in keeping with the economic and industrial position which the continent of South America occupies to-day; and no subject before this Congress calls for more earnest consideration.

The republics of South America are upon the threshold of a new development, which is to parallel that which is taking place in the northern half of the hemisphere. While we are beginning to anticipate the exhaustion of our natural resources, those of our neighbors remain almost untouched and undiscovered. The time is approaching when the world will look to the South American republics for the food supplies and raw materials

which can no longer be spared from the mortgaged resources of North America. They are the Mecca of immigrants looking for new lands and new opportunities, under new conditions. The world wants to know about them; but, most of all, they need to know about themselves. The time has come when a general movement, looking to a simultaneous census, along uniform lines, in all the South American republics, should find voice and impulse; and the present Congress should supply them.

The most generally accepted dates for a decennial census are those that begin or end decades. The tenth year of the decade has been accepted in the United States and in several European countries, as well as in Brazil. England and most of her colonies accept the first year of the decade. Other countries, including the Argentine Republic and Chile, take the midway year of the decade. No date other than one of these three should ever be fixed for a national census. The ideal census situation would have every census in the world as of the same year. More and more, censuses are being availed of for international comparisons. Their ultimate function is to reveal conditions in each country, in exact comparison with the similar conditions in every other. It is through this agency that progress in every civilized state will ultimately be measured. A uniform date for the world's censuses would be of incalculable service to the science of sociology,—a science which could not effectively accomplish its great mission without the aid of the census. This is an ideal situation, of which we may dream, but which can never be realized. The nations which have been measuring their advance by given periods from given dates will never disjoint their records to conform to this ideal world standard.

But there are cogent reasons why the census of all the South American states should be taken as of the same date. They are consanguineous states; they are moving shoulder to shoulder towards the same destiny; they can learn more from each other, in certain directions, than from any one else. It is not too late, if an earnest effort is made, to agree upon a uniform date for every South American census.

There are also reasons, cogent again, why it will be of the utmost advantage if the South American states can accept the census date of the United States, which is also the date accepted by the republic of Mexico, lying midway between us, and advancing with splendid energy along the same pathways.

Even more important is it, however, that the censuses of all nations, and particularly of all American nations, shall be taken upon schedules so substantially alike in their interrogatories as to permit of exact comparison of data. Half the value of a census is wantonly wasted unless it is so planned that there can be read out of it not only the facts that concern the nation taking it, but the meaning of those facts when interpreted by the experience of others. Theoretically, this is so easily done that you would suppose it would be universally done. As a matter of fact, the science of census taking is still so young that international uniformity in schedules does not yet exist. The International Statistical Institute has rendered much admirable service in the co-ordination of census inquiries, but it has fallen short of its opportunities in this the greatest field of its endeavor.

A uniform schedule for every South American census is only less important than that there shall be a periodical census in every South American state. It can be insured, if the proper stress is laid upon its importance, in any movement that may be undertaken along the lines urged in this paper.

In suggesting the population schedule of the United States census as the best available model for a census of all the South American states, I have in mind primarily the fact that our experiences, in the evolution of citizenhood, have been and are likely to continue to be increasingly similar. The population of the northern portion of the hemisphere is an amalgam, composed of elements drawn from many nationalities, diverse in the characteristics which mark off one race from another. These racial characteristics have been blended and combined in the strenuous mixture of our national life, so that there has been created a new race, unknown elsewhere, and already recognized as essentially North American. This marvellously

interesting commingling of peoples and intermixture of traits is steadily progressing in the states. The evolution of the new North American is always in gestation: the ultimate type, as he is to leave his impress upon history, is still to appear.

The United States census schedule is so framed as to record the various component parts which go to make up this new race, and to measure, so far as it is possible to do so, the proportion of each of the elements in the composite, and in accordance with the contribution of each decade to that composite.

Note now the similar conditions which are developing in the South American republics. Your states, like the United States, are too vast in fertile area to be peopled from within. You must draw, and increasingly, as we are doing, from all the countries whose overflowing populations are seeking what you have to offer in inexhaustible abundance. While the Spanish type will remain the basis of the South American race of the future, as the Anglo-Saxon remains the foundation of the citizenship of the United States, it will be modified, as with us; and out of the censuses which record the successive steps of this modification the future historian will extract the true explanation of the new civilization you are now preparing to contribute towards the world advancement.

This is the chief of many reasons why the United States schedule is best adapted to the South American states. It is a schedule a century old in its evolution. It has been tested under all conditions of human existence. It has been modified cautiously, as experience has pointed the way to more exact and definite results. It will stand, substantially without change, at the Thirteenth Census in 1910. It is adapted to the purposes and the situation of kindred peoples, who trace their origin to similar conditions, who grapple with like difficulties, who are advancing with strides more rapid than the European nations can comprehend, towards a common destiny.

Uniformity and co-operation in the census methods of the republics of the American continent is not only feasible at every point and in every particular, but it is most important in its bearing upon the future relations of all the republics concerned,

as well as to their mutual knowledge and understanding of each other. Each republic will gain from this co-operation with every other, and the weakest will gain the most in proportion.

The United States, with a longer experience than any other nation in decennial census taking, tenders its good wishes and its cordial assistance to each and every South and Central American republic which may feel the need of its co-operation in this great field. Every facility which the permanent Census Office has acquired will be placed at the service of any state which may seek it, and every chapter in our century of experience which may help to minimize the inexperience of others will be spread open and explained.

General Francis A. Walker, who was the superintendent of the Tenth and the Eleventh Censuses of the United States, and who was the greatest census taker the world has yet produced, once remarked that "the people of the United States are well able to pay for the very best census they can get"; and the people have proved each decade that he was right. If I may be permitted to paraphrase his remark, I will conclude by saying that the people of no South American country can afford *not* to pay for the very best census they can get, periodically taken, at least once every ten years, covering as many lines of national activity as possible, and taken in accordance with a uniform plan.

POPULATION OF THE WORLD.

USING LATEST ESTIMATES, AND, WHERE NO ESTIMATES ARE AVAILABLE, THE LATEST CENSUS RETURNS.

North America	114,238,303
Central America	4,741,301
South America	42,633,846
Europe	427,410,531
Asia	893,401,460
Africa	140,656,540
Australia and Oceania	49,905,550
Total	1,672,987,531

APPENDIX A.

Country.	Date of Census.		Population.		Latest Estimate.	
	First.	Last.	First.	Last.	Date.	Population.
Totals			555,247,959	957,388,235	—	1,134,065,703
North America			16,296,386	101,539,495	—	90,865,255
United States	1790	1900	3,929,214	76,303,387	1908	87,189,392
Greenland	1868	1901	9,352	11,893	—	—
Newfoundland and Labrador	1857	1901	124,288	220,984	1906	232,778
Canada	1825	1906	581,920	6,504,900	—	—
Mexico	[1] 1875	1900	9,495,157	13,605,919	—	—
West Indies:						
Cuba	1774	1907	172,620	2,048,980	—	—
Porto Rico	1887	1899	807,708	953,243	—	—
Haiti	—	—	—	—	1906	1,916,000
Santo Domingo	—	—	—	—		
Bahamas	1861	1901	35,287	53,735	1906	59,142
Barbados	1851	1891	135,939	182,867	1905	199,542
Jamaica	1844	1891	377,433	639,491	1907	480,835
Leeward Islands	1861	1901	109,419	127,434	1906	98,355
Trinidad and Tobago	1851	1901	83,981	[2] 273,899	1905	331,600
Windward Islands	1861	1901	31,900	[3] 160,869	1906	175,587
Bermudas	1861	1901	11,450	[2] 20,961	—	—
Danish West Indies	1860	1901	37,137	30,527	—	—
Martinique	1894	1901	187,692	203,781	1905	182,024
St. Pierre and Miquelon	—	1901	—	6,352	—	—
Guadeloupe and dependencies	1889	1906	165,889	190,273	—	—
Central America	—	—	1,999,372	4,069,979	—	2,283,141
British Honduras	1861	1901	25,635	37,479	1906	41,007
Guatemala	1880	1900	1,224,602	1,574,340	1903	1,842,134
Honduras	1881	1905	307,289	500,136	—	—
Salvador	—	[4] 1901	—	1,006,848	—	—
Nicaragua	1895	1906	380,000	600,000	—	—
Costa Rica	1826	1907	61,846	351,176	—	—
Panama	—	—	—	—	1907	400,000
South America			16,094,673	37,536,564		13,924,727
Colombia	—	[4] 1870	—	2,951,323	1905	4,279,674
Venezuela	1873	1894	1,784,194	2,444,816	1906	2,619,218
Guiana, British	1850	1891	127,695	278,328	1906	306,959
Guiana, Dutch	—	—	—	—	1905	75,465
Guiana, French	1881	1901	27,035	32,910	—	—
Brazil	1872	1900	9,931,000	17,371,069	—	—
Ecuador (only census ever taken that of city of Quito)	—	—	—	—	1906	1,400,000
Peru	—	[4] 1876	—	2,699,106	1896	4,609,999
Bolivia	1831	1900	1,088,768	1,633,610	—	—
Argentine Republic	1869	1905	1,737,076	5,106,378	—	—
Chile	[5] 1835	1905	1,010,332	3,399,928	—	—
Paraguay	[6] 1873	1899	231,079	[7] 533,299	1905	631,347
Uruguay	1852	1908	131,969	1,030,078	—	—
Curacao (colony)	1874	1905	23,972	53,466	—	—
Falkland Islands	1881	1901	1,553	2,253	1906	2,065

[1] A census of Mexico was taken in 1810 by Dr. Fernando Navarro y Noriega, at which population was reported as 6,122,354.
[2] Including military and naval.
[3] Including St. Vincent, estimated at 47,548.
[4] Only census ever taken.
[5] First census 1831, not completed until 1835.
[6] A count by the Jesuits was made in 1740.
[7] Excluding Indians estimated at 50,000.

APPENDIX A.—*Continued.*

Country.	Date of Census.		Population.		Latest Estimate.	
	First.	Last.	First.	Last.	Date.	Population.
Europe			240,380,224	392,502,789		269,837,147
England and Wales	1801	1901	8,892,536	32,527,843		
Isle of Man	1821	1901	[1] 89,508	54,752		
Channel Islands	—	1901	—	95,618	1907	44,100,231
Ireland	1801	1901	5,216,329	4,458,775		
Scotland	1801	1901	1,608,420	4,472,103		
[2] Army and navy and seamen abroad,	1801	1901	442,013	367,736		
[3] Malta	1860	1901	139,842	[4] 207,890	—	—
Gibraltar	[5] 1871	1901	18,695	27,460	1905	[6] 18,643
Norway	[7] 1801	1900	883,440	2,240,032	1906	2,321,088
Sweden	1749	1900	1,746,449	5,136,441	1906	5,337,055
[8] Portugal	1864	1901	4,188,410	5,423,132	1904	5,556,814
Spain	[9] 1857	1900	15,464,340	[10] 18,831,574	1905	19,565,903
France	1800	1906	27,349,003	39,252,245	—	—
Belgium	1846	1900	4,337,196	6,693,810	1906	7,238,622
The Netherlands	1829	1899	2,613,487	5,104,137	1906	5,672,237
Switzerland	1837	1900	2,190,258	3,315,443	1905	3,463,609
Italy, including Sicily and Sardinia,	1861	1901	21,777,334	32,475,253	1907	33,640,710
Denmark	[11] 1801	1906	925,680	2,588,919	—	—
[12] Iceland	1801	1901	47,240	78,470	—	—
[13] Faroe Island	1801	1906	5,265	16,349	—	—
German Empire	1871	1905	41,062,697	60,641,278	—	—
Austria-Hungary	1850	1900	30,726,503	45,405,267	—	—
Greece	1832	1907	712,608	2,631,952	—	—
Turkey in Europe	—	—	—	—	1907	6,130,200
Bosnia and Herzegovina	1879	1895	1,158,440	1,568,092	1907	1,600,000
Bulgaria	1881	1905	2,007,919	4,035,648	—	—
Cyprus	—	1901	—	237,152	1905	248,114
Crete	—	1900	—	310,185	1907	310,300
Samos	—	—	—	—	1902	53,400
Montenegro	—	—	—	—	1907	230,000
Monaco	1890	1900	13,304	15,180	—	—
Andorra	—	—	—	—	1907	5,230
Luxemburg (Grand Duchy)	1867	1900	199,958	236,543	1905	246,455
San Marino	—	1906	—	11,439	—	—
Servia	1834	1905	678,137	2,688,747	—	—
Rumania	1844	1899	3,578,000	5,956,690	1907	6,585,534
[14] Russia in Europe	[15] 1851	1897	62,307,213	105,396,634	1906	127,513,000

[1] Including Channel Islands.
[2] Also included in the returns for countries where stationed.
[3] Including Gozo and Comino.
[4] Including military and naval and merchant shipping.
[5] A count of population in 1860 gave 18,491.
[6] Excluding military and naval, etc.
[7] A count made in 1769 gave population as 723,141.
[8] Including Azores and Madeira.
[9] A count made in 1594 gave population as 8,206,791.
[10] Legal population.
[11] A count made in 1769 gave population as 814,238, and one in 1787 gave 840,045.
[12] A count made in 1769 gave population as 46,201.
[13] A count made in 1769 gave population as 4,773.
[14] Including Finland.
[15] Before 1897 there were various enumerations called revisions. In 1897 the whole of the empire was enumerated.

APPENDIX A.—*Continued.*

Country.	Date of Census.		Population.		Latest Estimate.	
	First.	Last.	First.	Last.	Date.	Population.
Asia			274,834,842	376,003,682		594,564,749
Russia in Asia	—	1897	—	22,758,203	1908	26,140,200
Japan, including Formosa and the Pescadores	1875	1903	32,794,897	49,584,414	1904	50,131,414
Korea	—	—	—	—	1907	10,000,000
Chinese Empire	—	—	—	—	1908	438,214,000
India (Native States)	1872	1901	48,267,910	62,461,549	—	—
British India	1872	1901	190,563,048	231,899,507	—	—
North Borneo	—	1901	—	104,527	1907	160,000
[1]Ceylon	1871	1901	2,405,287	3,573,419	—	—
Hong Kong	1857	1906	77,094	[1]328,638	—	—
Wei-Hai-Wei	—	1901	—	130,792	1907	150,000
The Straits Settlements	1871	1901	308,097	[1]573,598	—	—
Federated Malay States	1891	1901	418,509	678,595	1906	915,000
State of Johor	—	—	—		1907	200,000
French Indo-China:						
French India	—	1901	—	273,185	1907	275,400
Annam	—	—	—	—	1907	6,124,000
[2]Cambodia	—	—	—	—	1907	1,500,000
Cochin-China	—	—	—	—	1907	2,968,600
Tonkin and Laos	—	—	—	—	1907	10,650,000
Afghanistan	—	—	—	—	1907	4,500,000
Turkey in Asia	—	—	—	—	1907	17,683,500
Persia	—	—	—	—	1907	9,500,000
Bhutan	—	—	—	—	1864	20,000
Oman	—	—	—	—	1907	800,000
Nepal	—	—	—	—	1907	5,000,000
Bokhara	—	—	—	—	1907	1,250,000
Khiva	—	—	—	—	1907	800,000
Siam	—	1904	—	[3]3,308,032	1907	6,686,846
Portuguese possessions	—	1901	—	329,223	1907	895,789
Africa			1,497,467	33,074,539		123,814,713
French colonies and dependencies	—	—	—	—	1907	34,092,300
British colonies and dependencies:						
Ascension Island	1891	1901	205	410	—	—
Basutoland	1891	1904	218,324	348,848	—	—
Bechuanaland Protectorate	—	1904	—	[4]120,776	1907	200,000
Cape of Good Hope	[5]1865	1904	496,381	2,409,804	—	—
East Africa Protectorate	—	—	—	—	1907	4,000,000
Uganda Protectorate	—	—	—	—	1907	4,000,000
Zanzibar and Pemba	—	—	—	—	1907	245,000
Mauritius and dependencies	1851	1901	184,696	378,195	1905	[6]382,972
[1]Natal, including Zululand	—	1904	—	1,108,754	1906	1,151,907
Nyasaland Protectorate	—	—	—	—	1907	927,355
[1]Orange River Colony	1880	1904	133,518	387,315	—	—
Rhodesia	—	1907	—	[4]999,636	1907	803,300
St. Helena	1839	1906	4,205	3,526	—	—
Seychelles	1851	1901	6,811	19,258	1905	20,767

[1] Including military and naval.
[2] Not including provinces ceded by Siam in 1907.
[3] Census of 1904 was for twelve Monthons or provincial circles only, the metropolitan Monthon of Bangkok being among those not enumerated.
[4] Partly estimated.
[5] First census taken under Act of 1862. A count made in 1691 gave population as 1706.
[6] Excluding military and naval.

APPENDIX A.—*Continued.*

Country.	Date of Census.		Population.		Latest Estimate.	
	First.	Last.	First.	Last.	Date.	Population.
Africa.—*Continued.*						
British colonies and dependencies.—*Continued.*						
Somaliland Protectorate	—	—	—	—	1906	300,029
The Transvaal	—	1904	—	[1] 1,354,200	—	—
Nigeria	—	1901	—	[2] 13,606,093	1906	14,782,182
Sierra Leone	1857	1901	38,318	[2] 1,026,482	—	—
Gambia, Colony and Protectorate,	1851	1901	6,939	90,404	—	—
Gold Coast	1871	1901	408,070	[3] 1,486,433	—	—
German colonies in Africa	—	—	—	—	1907	11,700,000
Italian dependencies in Africa	—	—	—	—	1907	450,000
Portuguese dependencies	—	—	—	—	1907	8,248,500
Turkey in Africa	—	—	—	—	1907	1,000,000
Egypt	—	1897	—	9,734,405	—	—
Spanish possessions	—	—	—	—	1907	10,400
Congo Free State	—	—	—	—	1907	30,000,000
Abyssinia	—	—	—	—	1907	10,000,000
Liberia	—	—	—	—	1907	1,500,000
Australia and Oceania			4,144,995	12,661,187		38,775,971
Victoria	1854	1901	[4] 234,298	1,201,341	—	—
New South Wales	1821	1901	29,662	1,359,133	1906	1,526,697
Southern Australia	1844	1901	[4] 17,366	389,727	—	—
Western Australia	1848	1901	[4] 4,622	189,385	—	—
Queensland	1861	1901	[4] 30,059	[5] 503,266	—	—
New Zealand	1858	1906	59,413	[6] 936,309	—	—
Tasmania	1841	1901	[4] 50,216	172,475	1903	177,547
Fiji Islands and Rotuma	1881	1901	127,486	120,124	—	—
Tonga Islands	—	—	—	—	1907	20,677
British New Guinea	—	—	—	—	1907	350,000
Other British Islands	—	—	—	—	1907	176,600
New Caledonia and dependencies	—	—	—	—	1907	53,350
Other French establishments in Oceania	—	—	—	—	1907	29,000
Samoa Islands (United States)	—	—	—	—	1907	6,100
East Indies, Dutch	—	—	—	—	1907	36,000,000
Philippine Islands	1877	1903	3,567,685	7,635,426	—	—
Guam	—	—	—	—	1907	9,000
German dependencies in the Pacific	—	—	—	—	1907	427,000
Hawaii	1853	1900	24,188	154,001	—	—

[1] Including military and naval.
[2] Partly estimated. British Statistical Abstract, 1906.
[3] Partly estimated. Census British Empire, 1901.
[4] Excluding aborigines.
[5] Excluding aborigines, estimated at 20,000.
[6] Including Cook and other islands.

OCCUPATION MORTALITY STATISTICS OF SHEFFIELD, ENGLAND, 1890–1907.

By F. S. Crum.

The annual reports of the Medical Officer of Health of Sheffield, England, have long been of special interest and value because they have contained occupation mortality data. This fact in itself is sufficient to mark the reports as being unique, for mortality by occupation is very rarely included in the health reports of England or any other country. Sheffield being an important centre for the manufacture of cutlery and files, many men are employed there as cutlers, grinders, toolmakers, file-makers, etc., and the occupation statistics are of special value because they throw considerable light upon certain trades which are health-injurious.

The present report, like those for many previous years, contains the tabulated mortality returns for all of the important occupations. The industries of special importance, however, are those already specifically mentioned. The following table found on page xi of the report for 1907 will indicate in a rough way the effect of certain occupations on mortality, and particularly their effect on the mortality from certain causes of death:—

AVERAGE MORTALITY IN SHEFFIELD FROM ALL CAUSES AND FROM PHTHISIS AND DISEASES OF THE RESPIRATORY ORGANS DURING THE THREE YEARS, 1905, 1906, AND 1907, IN CERTAIN DUSTY TRADES, AND AMONG ALL MALES OVER TWENTY YEARS OF AGE.

Trade.	Males over 20 Years of Age. (Estimated Population.)	Average Death-rates per 1,000 Living.		
		All Causes.	Phthisis.	Respiratory Diseases.
Grinders	3,375	34.2	16.3	5.7
Cutlers	2,500	40.8	7.2	8.4
File-cutters	1,850	32.1	4.5	5.4
Silver, etc., Workers . . .	2,380	26.9	5.5	4.9
All Males	127,000	16.2	2.6	2.1

This table would have been more useful if it had been given by divisional periods of life, but even in its present form it is suggestive of the baneful effect on health of certain trades which expose the workmen to mineral and metallic dust. The mortality rate from all causes is shown to have been more than double the expected rate for grinders and cutlers, and excessive for file-cutters and other metal-goods workers. The mortality from phthisis was more than six times as high for grinders as for all males, and very much in excess also among the other metal workers. The mortality from respiratory diseases was four times as high for cutlers as for all occupied males, and considerably in excess among other metal workers.

Unfortunately, the number of persons employed in the various trades peculiar to Sheffield are not available by divisional periods of life, and it is therefore impossible to calculate death-rates by age groups. The mortality returns, however, are given by age groups and by principal causes of death, and a study of these statistics can be made in such a manner as to show the proportion which certain causes of death bear to the mortality from all causes at various divisional periods of life. This method, when used in a comparative way, is very suggestive and perhaps quite as determining for certain purposes as death-rates per 1,000 living.

In the following tables a summary is presented of the statistics of four typical trades—grinders, cutlers, tool-makers, and file-cutters—for the eighteen-year period 1890–1907, for the purpose of showing whether or not there has been any improvement in the mortality from phthisis and respiratory diseases of the workmen in the trades specified:—

I. PROPORTIONATE MORTALITY OF *GRINDERS* FROM PHTHISIS AND RESPIRATORY DISEASES IN SHEFFIELD, 1890–1907.

Ages.	Number of Deaths from						Percentage of Mortality from Phthisis.		
	All Causes.			Phthisis.					
	1890–95.	1896–1901.	1902–07.	1890–95.	1896–1901.	1902–07.	1890–95.	1896–1901.	1902–07.
Under 25	34	23	22	14	8	12	41.2	34.8	54.5
25–34	88	69	86	43	29	61	48.9	42.0	70.9
35–44	137	142	143	72	80	93	52.6	56.3	65.0
45–54	201	183	189	78	82	106	38.8	44.8	56.1
55–64	130	163	162	31	45	66	23.8	27.6	40.7
65 and over	90	80	107	8	7	14	8.9	8.8	13.1

Ages.	Number of Deaths from Respiratory Diseases.			Percentage of Mortality from					
				Respiratory Diseases.			Phthisis and Respiratory Diseases.		
	1890–95.	1896–1901.	1902–07.	1890–95.	1896–1901.	1902–07.	1890–95.	1896–1901.	1902–07.
Under 25	10	5	4	29.4	21.7	18.2	70.6	56.5	72.7
25–34	22	13	7	25.0	18.8	8.1	73.9	60.9	79.1
35–44	27	29	15	19.7	20.4	10.5	72.3	76.8	75.5
45–54	70	47	32	34.8	25.7	16.9	73.6	70.5	73.0
55–64	61	61	43	46.9	37.4	26.5	70.8	65.0	67.3
65 and over	39	29	25	43.3	36.3	23.4	52.2	45.0	36.4

II. PROPORTIONATE MORTALITY OF *CUTLERS** FROM PHTHISIS AND RESPIRATORY DISEASES, SHEFFIELD, 1890–1907.

Ages.	Number of Deaths from All Causes.			Number of Deaths from Phthisis.			Percentage of Mortality from Phthisis.		
	1890–95.	1896–1901.	1902–07.	1890–95.	1896–1901.	1902–07.	1890–95.	1896–1901.	1902–07.
Under 25	52	36	22	26	16	9	50.0	44.4	40.9
25–34	62	49	40	30	27	20	48.4	55.1	50.0
35–44	145	85	74	52	32	30	35.9	37.6	40.5
45–54	141	146	120	22	39	31	15.6	26.7	25.8
55–64	193	183	154	21	22	22	10.9	12.0	14.7
65 and over	327	204	226	3	8	10	0.9	3.9	4.4

Ages.	Number of Deaths from Respiratory Diseases.			Percentage of Mortality from Respiratory Diseases.			Percentage of Mortality from Phthisis and Respiratory Diseases.		
	1890–95.	1896–1901.	1902–07.	1890–95.	1896–1901.	1902–07.	1890–95.	1896–1901.	1902–07.
Under 25	8	11	6	15.4	30.6	27.3	65.4	75.0	68.2
25–34	12	4	9	19.4	8.2	22.5	67.7	63.3	72.5
35–44	37	20	9	25.5	23.5	12.2	61.4	61.2	52.7
45–54	54	39	27	38.3	26.7	22.5	53.9	53.4	48.3
55–64	82	48	35	42.5	26.2	22.7	53.4	38.3	37.0
65 and over	117	50	58	35.8	24.5	25.7	36.7	28.4	30.1

*"The term cutler has not, in Sheffield, the meaning popularly given it; that of a maker of scissors, forks, razors, and other small cutting utensils. Such a one is a dry grinder; whereas a cutler is one who makes heavier goods, edge-tools, saws and scythes, all of which are wet ground." (Arlidge, "Diseases of Occupation," p. 341.)

"The baneful tendency of the trade [grinding] is not confined to dry grinding; the position in which the artisans work is exceedingly unfavorable to the action of the lungs, the upper half of the body being constantly bent forward over the revolving stone; and in the branches in which dry grinding is not used, the articles, such as saws, scythes and edge tools, are heavy, demanding great muscular exertion. Independently, however, of the bodily exhaustion which is occasioned, the grinders are exceedingly subject to acute inflammatory diseases from the exposed situations in which they work." (Holland, "The Vital Statistics of Sheffield," p. 115.)

they work." (Holland, "The Vital Statistics of Sheffield," p. 115.)

III. PROPORTIONATE MORTALITY OF *TOOL-MAKERS* FROM PHTHISIS AND RESPIRATORY DISEASES, SHEFFIELD, 1890–1907.

Ages.	Number of Deaths from						Percentage of Mortality from Phthisis.		
	All Causes.			Phthisis.					
	1890–95.	1896–1901.	1902–07.	1890–95.	1896–1901.	1902–07.	1890–95.	1896–1901.	1902–07.
Under 25	22	31	27	12	12	7	54.5	38.7	25.9
25–34	38	52	61	16	20	30	42.1	38.5	49.2
35–44	65	70	85	26	26	32	40.0	37.1	37.6
45–54	104	126	135	18	26	36	17.3	20.6	26.7
55–64	134	152	182	14	19	30	10.4	12.5	16.5
65 and over	180	246	333	5	2	8	2.8	0.8	2.4

Ages.	Number of Deaths from Respiratory Diseases.			Percentage of Mortality from					
				Respiratory Diseases.			Phthisis and Respiratory Diseases.		
	1890–95.	1896–1901.	1902–07.	1890–95.	1896–1901.	1902–07.	1890–95.	1896–1901.	1902–07.
Under 25	5	5	4	22.7	16.1	14.8	77.3	54.8	40.7
25–34	3	10	7	7.9	19.2	11.5	50.0	57.7	60.7
35–44	15	7	15	23.1	10.0	17.6	63.1	47.1	55.3
45–54	41	35	25	39.4	27.8	18.5	56.7	48.4	45.2
55–64	53	38	50	39.6	25.0	27.5	50.0	37.5	44.0
65 and over	67	58	90	37.2	23.6	27.0	40.0	24.4	29.4

IV. PROPORTIONATE MORTALITY OF *FILE-CUTTERS** FROM PHTHISIS AND RESPIRATORY DISEASES, SHEFFIELD, 1890–1907.

Ages.	Number of Deaths from All Causes.			Number of Deaths from Phthisis.			Percentage of Mortality from Phthisis.		
	1890–95.	1896–1901.	1902–07.	1890–95.	1896–1901.	1902–07.	1890–95.	1896–1901.	1902–07.
Under 25	24	29	18	8	5	10	33.3	17.2	55.6
25–34	48	39	20	17	17	4	35.4	43.6	20.0
35–44	115	73	68	28	25	22	24.3	34.2	32.4
45–54	152	118	96	30	23	21	19.7	19.5	21.9
55–64	116	133	112	16	13	9	5.2	9.8	8.0
65 and over	119	106	121	2	4	4	1.7	3.8	3.3

Ages.	Number of Deaths from Respiratory Diseases.			Percentage of Mortality from Respiratory Diseases.			Percentage of Mortality from Phthisis and Respiratory Diseases.		
	1890–95.	1896–1901.	1902–07.	1890–95.	1896–1901.	1902–07.	1890–95.	1896–1901.	1902–07.
Under 25	6	8	1	25.0	24.1	5.5	58.3	41.3	61.1
25–34	7	6	3	14.6	15.4	15.0	50.0	59.0	35.0
35–44	24	4	13	20.9	5.5	19.1	45.2	39.7	51.5
45–54	36	21	9	23.7	17.8	9.4	43.4	37.3	31.3
55–64	36	28	16	31.0	21.1	14.3	36.2	30.9	22.3
65 and over	43	23	32	36.1	21.7	26.4	37.8	25.5	29.7

* File-cutting as carried on in Sheffield in the past by hand methods has exposed the cutters to lead poisoning, or plumbism, to such a degree that this factor alone has called forth many and extended comments by qualified inquirers. These observations have extended over a long period, and have been made by various English authorities, including Drs. Holland, Greenhow, Hall, White, Thomson, Arlidge, Littlejohn, Robertson, Scurfield, Oliver, and others. The subject of lead poisoning in this connection is such a large one that it will be worth while to give it special consideration in a future note.

The figures in Table I. do not indicate that there has been any marked improvement in the mortality from consumption and respiratory diseases among the *grinders* of Sheffield during the period 1890 to 1907. In fact, as a rule with few exceptions, the proportionate mortality from consumption and from consumption and respiratory diseases combined was higher at all ages during the six years 1902–07 than during either of the other six-year periods. On the other hand, the mortality from respiratory diseases, when considered separately, seems to have declined fairly constantly at all ages or divisional periods of life.

Table II. shows that the proportion of the total mortality due to consumption has increased among the *cutlers* of Sheffield at all ages over 25. The proportionate mortality from respiratory diseases has increased at ages under 35 and decreased quite considerably at ages 35 and over. Combining the mortality from consumption and respiratory diseases, the proportionate mortality from the two was higher during the period 1902–07 than during 1890–95 at ages under 35 and lower at ages 35 and over.

The proportionate mortality of *tool-makers* from consumption and respiratory diseases has, on the whole, showed improvement during the eighteen-year period under observation. The age period 25–34 is the only exception when both causes are combined. When consumption only is considered, the improvement was more noteworthy during the period 1896–1901 than during 1902–07. In fact, the proportionate mortality from consumption was lower among tool-makers during 1902–07 than during 1890–95 at ages under 25, 35–44, and 65 and over, and higher at ages 25–34, 45–54, and 55–64.

The proportionate mortality of *file-cutters* has not improved from consumption, but was higher at all ages, except 25–34, during 1902–07 than during 1890–95. On the other hand, there was a quite general improvement in the proportionate mortality from respiratory diseases.

Summarizing the four preceding tables they seem to indicate that, if there has been an improvement in the death-rate from

all causes among grinders, cutlers, tool-makers, and file-cutters in Sheffield during 1890–1907, the improvement has not been due to any considerable reduction in the mortality from consumption, or, at any rate, the mortality from consumption has not declined in proportion to all causes, for, as a rule, the proportionate mortality from consumption was higher during 1902–07 than during 1890–95. The apparent general improvement in the mortality from respiratory diseases is quite noticeable in all the tables, and it is possible that in recent years deaths may have been reported as phthisis that would formerly have been reported as bronchitis or some other respiratory disease.

In the following table, comparison is made of the proportionate mortality of grinders, cutlers, tool-makers, and file-cutters from consumption and respiratory diseases. To clearly indicate the excessive mortality in these Sheffield trades from diseases of the lungs and air passages, the corresponding proportionate mortality for all occupied males in England and Wales as reported in the Supplement to the Sixty-fifth Report of the Registrar-General is given in the last column.

COMPARATIVE PROPORTIONATE MORTALITY, SHEFFIELD, ENGLAND, 1902–07.

PHTHISIS.

Ages.	Grinders.	Cutlers.	Tool-makers.	File-cutters.	All Occupied Males, England and Wales, 1900–02.
Under 25 . .	54.5	40.9	25.9	55.6	30.5
25–34 . . .	70.9	50.0	49.2	20.0	33.8
35–44 . . .	65.0	40.5	37.6	32.4	26.9
45–54 . . .	56.1	25.8	26.7	21.9	17.1
55–64 . . .	40.7	14.7	16.5	8.0	7.0
65 and over .	13.1	4.4	2.4	3.3	1.2

RESPIRATORY DISEASES.

Under 25 . .	18.2	27.3	14.8	5.5	10.5
25–34 . . .	8.1	22.5	11.5	15.0	12.8
35–44 . . .	10.5	12.2	17.6	19.1	16.3
45–54 . . .	16.9	22.5	18.5	9.4	18.7
55–64 . . .	26.5	22.7	27.5	14.3	21.1
65 and over .	23.4	25.7	27.0	26.4	20.1

COMPARATIVE PROPORTIONATE MORTALITY, SHEFFIELD, ENGLAND, 1902–07.

PHTHISIS AND RESPIRATORY DISEASES.

Ages.	Grinders.	Cutlers.	Tool-makers.	File-cutters.	All Occupied Males, England and Wales, 1900–02.
Under 25 . .	72.7	68.2	40.7	61.1	41.0
25–34 . . .	79.1	72.5	60.7	35.0	46.6
35–44 . . .	75.5	52.7	55.3	51.5	43.2
45–54 . . .	73.0	48.3	45.2	31.3	35.8
55–64 . . .	67.3	37.0	44.0	22.3	28.1
65 and over .	36.4	30.1	29.4	29.7	21.3

This table requires little comment. It shows that persons employed as grinders, cutlers, tool-makers, and file-cutters, are considerably more liable to death from some disease due to, or accelerated by, dust inhalation than would be expected on the basis of the mortality of all occupied males in England and Wales. The statistics point unmistakably to the causes of the high mortality of these classes or groups of workmen, and they indicate the need of greater precautions and more effective safeguards against the inhalation of the metallic and mineral dusts peculiar to the trades specified.

In conclusion I may again* point out that there are many cities and towns in the United States where one or more industries, more or less hazardous or health-injurious, are centralized. For example: Trenton and Perth Amboy, N.J., and Circleville, Ohio, are pottery centres; Orange, N.J., and Danbury, Conn., are felt-hat making centres; Barre, Vt., among other cities, is a centre for stone-cutting; White Mills, Pa., and Corning, N.Y., for glass-cutting; Amsterdam, Cohoes, and Middletown, N.Y., for the knitting industry; Philadelphia, Pa., for carpet mills; Fall River and New Bedford, Mass., for cotton and woollen textiles; Paterson, N.J., for silk goods; Pittsburg, Pa., for iron and steel products; Minneapolis, Minn., for the flour industry, and Key West, Fla., for the manufacture of cigars and cigarettes. If the local authorities in such cities and towns would

* "The Mortality from Consumption in Small Cities," Quarterly Publications of the American Statistical Association, December, 1907.

evince a willingness and enthusiasm to contribute to the general fund of knowledge of trade diseases and mortality, they would not only perform a really valuable service to their fellow men, but they would at the same time connect their names with investigations similar to those which have contributed greatly to the fame of Ramazzini, Thackrah, Hirt, Farr, Arlidge, Oliver, and some others of the select few who have found time to give to the world the results of their inquiries into the effect of certain industries or trades upon the disease liability and mortality of those employed therein. Few, indeed, are the contributions which have been made along these lines by qualified American authorities. It may very properly be said that here is a field where the harvest is full and ripe, but the reapers few.

STANDARDIZATION OF HOUSING INVESTIGATIONS.

By John R. Commons, Professor of Political Economy,
University of Wisconsin.

I had read that Glasgow was the most densely crowded of modern cities, because fourteen per cent. of the families lived in one room. After visiting one of the model tenements of the London County Council, I was asked by a Glasgow mechanic to look into his ancient rookery. The one room in which he and his family lived seemed to me to be larger than the three-room apartment of his fellow who enjoyed the municipal socialism of modern London. The difference was that he put up his own flimsy partitions, while paternal London got the credit of relieving congestion by merely erecting permanent partitions.

In Pittsburg I was told by experts in housing investigations that the cost of housing there was greater than in any other city of the country, but when I compared the few houses that I saw with similar houses in Chicago, taking into account appurtenances, I could not see that the costs were different.

British workmen and employers contended that their lower wages were compensated by the lower cost of food as well as housing, compared with American wages, and I could not refer them to any authentic standards of food and prices, housing and rents, that would disprove their claims to their satisfaction.

If comparisons of this kind were a matter of profit and loss, standard units would long since have been devised. Such units have been worked out by the trusts, syndicates, and engineering societies, in order to bring all of their manufacturing plants, their superintendents, managers, and engineers, their inventions and experiments, to an exact comparison of efficiency based on unit costs.

There is one department of sociology which eventually will make it plain that standard units of housing, food, and occupation, are also a matter of profit and loss. This is the health, vigor, and efficiency of the working population. The trade longevity of the workman, the number of days lost through sickness, fatigue, and devitalizing, the rate of mortality, are the greatest of all matters of national business, and they are largely the results of housing, food, and occupation.

But, to what extent these different factors enter, it is impossible to say until standard units are devised by which to compare each factor with the resulting morbidity, mortality, and fatigue.

Here the problem of the economist and that of the hygienist overlap. The economist is interested in comparative cost of living, the hygienist in comparative causes of industrial efficiency. But the cost of living is really the cost of the workman's efficiency. If so, the unit of comparison which the economist wants is the same unit that the hygienist wants. Take housing as the simplest problem. The comparative cost of housing is the comparative price paid for a unit of housing accommodation. But housing accommodation is not merely floor space or "rooms per occupant": it is also location, air, ventilation, sunlight, structural condition, bath, laundry, running water, etc. These are also the conditions of health. The cost of housing is one of the costs of industrial vigor. If, then, we devise our standard unit with reference to the conditions of health, we shall have practically the standard needed for comparing prices of housing accommodation.

But the unit of housing accommodation is a complicated and elusive one. It consists of many factors, and no two individual investigators attach the same weight to each of the factors. The problem here is exactly the same as that which has been met in standardizing and grading agricultural products, such as wheat, corn, oats, butter, cheese, horses, cows, pigs, and so on. To illustrate by means of the score card used in the department of Animal Husbandry of the University of Wisconsin: A draft horse, perfect in every particular, is represented by 100 points. These are subdivided into a detailed and com-

plete survey of the animal, involving 36 specifications. To each specification is given a weight, or value, of 1 to 10 points, corresponding to its importance in making up the perfect animal. This weighting is a matter of experience, and is changed from time to time. An official score card adopted by a breeders' association, or, in the case of grains, by the produce exchange, is the result of many years of experiment and improvement, both in the description of the specifications and in the weights assigned to each specification. Thus the "general appearance" of the draft horse is now given a weight of 29 points, and this is subdivided into "weight," 5 points, "form," 4 points, "quality," 6 points, "action," 10 points, and "temperament," 3 points. "Head and neck" are given 8 points, subdivided into "head," "forehead," "eyes," "ears," "muzzle," "lower jaw," and "neck," with one or two points each. These standard weights, or values, are printed in a column opposite each specification, and a second, or blank column is provided under the caption "Points Deficient." In using the score card, the "scorer" goes over the horse, noticing in detail all the points specified, and then marks down opposite each his judgment of the degree to which the animal before him is deficient in that particular point. The total of all points deficient is then deducted from 100, and the result is the grade of the animal scored. It is an interesting fact, illustrating the accuracy of this method of standardizing, that recently two horse valuers, one employed by the Wisconsin Railway Commission, and the other by the Milwaukee Street Car Company, in valuing fifty horses belonging to the company, came within one or two points of placing the same value on each horse.

In attempting to adapt the score card method to the housing problem, I have drawn up the following tentative score card for dwelling-houses. The twenty-five specifications can doubtless be greatly improved. Others might be added, and some might be dropped. The weights given to each might be changed materially. The latter, however, is not important, because, if all houses are scored by the field agents according to an agreed scale, any hygienist or economist afterwards can revise the

weighting according to his own theory of the relative weights. The main object is to agree on the specifications, and to state them in such a way that as little discretion as possible shall be left to the field agents. Where measurements are possible, this is easily done, as in the case of "window openings." Where measurements are not possible, the agents must depend on their judgment, but this judgment can be brought close to uniformity by means of "instructions for discrediting when depending on judgment." For convenience I have used only the weights 3 and 6 for those specifications depending on judgment, and have introduced the same kind of instructions as those given in the official score cards for horses and cattle. Further instructions will be found under the several specifications.

When a house is scored in this way, from the standpoint of health, we shall have the "total points deficient," and the "actual score" of that house compared with a perfect or ideal house. We are then in a position to compare the rents or cost of housing by correcting the "nominal rent" by means of the "actual score." I have suggested three standard units of comparison; viz., "rent per room," "rent per 100 sq. ft." of floor space, and "rent per 1,000 cu. ft." of air capacity. Taking "rent per 100 sq. ft.," which is probably the fairest unit under all circumstances, it can easily be seen that, of two houses renting nominally at $1.00 per month per 100 sq. ft., if the "actual score" of one is 80 and the other 50, the "real rent" of the one is $1.25 and the other $2.00 for the unit of house accommodation compared with the real rent of $1.00 for a perfect house.

DWELLING HOUSE SCORE CARD

Applies to a single Family or Household

State.....*City*..... .....*Street*.....*No*.....

Name of Owner..... *Name of Occupant*.....

Name of Investigator..... *Date*.....

Instructions for Discrediting when Depending on Judgment

Deduct from possible 6; very slight, 1; slight, 2; marked, 3; very marked, 4; extreme, 5.
Deduct from possible 3; very slight, ½; slight, 1; marked, 1½; very marked, 2; extreme, 2½.

I.—DWELLING—100 POINTS	Possible Score	Points Deficient	Actual Score
LOCATION—18 Points	(18)	( )	( )
1. General Character of Neighborhood, villa, farm, residence, park (Discredit for factory, slum, neglected district)	3	.....	.....
2. Elevation, high ground, sloping away on all sides.....	3	.....	.....
3. Condition of Street, width (ft.)....., clean, smooth, hard, free from dust, sprinkled, flushed, free from refuse ..... (Indicate whether asphalt, block stone, macadam, cobble, wood, dirt)	3	.....	.....
4. Smoke, free from (indicate source).....	3	.....	.....
5. Odors, free from nauseous (indicate source).....	3	.....	.....
6. Dust, free from (indicate source).....	3	.....	.....
CONGESTION OF BUILDINGS—26 Points	(26)	( )	( )
7. Character of Dwelling—10 Points			
Detached	10	.....	.....
Attached, separate entrance, discredit 1 point			
Attached, common entrance, discredit 2 points			
Flat (entire floor), discredit 3 points			
Apartment (2 or more on same floor), discredit 4 points			
Basement (over ½ above street level), discredit 5 points			
Cellar (over ½ below street level), discredit 6 points			
Additional discredits for flat or apartment without elevator, 2d floor 2 points, 3d floor 3 points, etc.			
8. Sunlight—16 Points			
Height and distance of next building (use foot of its own window in case of flat or apartment, otherwise foot of lower window, as base line above which to measure height of next building)			
Direction (Ind. street or alley) / **Height** (feet) / **Distance** (feet) / **Per Cent** (Height=100)			
North	3	.....	.....
South	5	.....	.....
East.....	4	.....	.....
West.....	4	.....	.....
(If distance equals or exceeds height, no points deficient—distance is less than height, actual score is same per cent of possible score as distance to height, e.g., if distance=20% of height, actual score=20% of possible score, etc.)			
WINDOW OPENINGS—11 Points	(11)	( )	( )

Rooms (Indicate kitchen, sleeping, bath, etc.)	**Window Space** (Sq. Ft.)	**Floor Space** (Sq. Ft.)	**Per cent Window Space** (Floor space=100)
1.....	.....	.....	.....
2.....	.....	.....	.....
3.....	.....	.....	.....
4.....	.....	.....	.....
5.....	.....	.....	.....
6.....	.....	.....	.....
Total.....	.....	.....	.....
Number of Rooms (including dark rooms) having window space less than 20%....			.....
Per Cent of same to total rooms			.....
Number of Dark Rooms			.....
Per Cent of same to total rooms.....			.....

DWELLING HOUSE SCORE CARD—Continued

I.—DWELLING.—100 POINTS.	Possible Score	Points Deficient	Actual Score
9. Total Window Space, not less than 20% of total floor space.... (Discredit ¼ point for each deficiency of 1%—e.g., window space 16% of floor space, discredit 1 point, leaving actual score 4)	5	.....	.....
Distribution of Window Space—6 Points			
10. Deficient Rooms, no room less than 20%..... (Discredit same per cent of possible score as per cent of rooms having window space less 20 per cent, e.g., 6 room house, 2 rooms deficient, discredit ⅓ of 3=1, leaving actual score 2)	3	.....	.....
11. Dark Rooms, no room without window openings..... (Discredit same per cent of possible score as per cent of dark rooms, e.g., 6 room house, 1 dark room, discredit ⅙ of 3=½, leaving actual score 2½)	3	.....	.....
Notice: dark room is discredited also above as "deficient room."			
AIR AND VENTILATION—13 Points	(13)	( )	( )
12. Heating Arrangements, adapted to secure circulation of fresh air, such as open fire-place, hot air furnace, stove (connecting directly with chimney in same room)..... (Discredit 1 point for steam or hot water, ¼ point for each stove connecting with chimney in another room)	4	.....	.....
13. Temperature, adapted to secure even temperature, not excessive heat or cold, equal in different rooms..... (Discredit proportionately for each room without heating appliance)	3	.....	.....
14. Dampness, freedom from (indicate whether cellar, kitchen, sleeping rooms, other rooms)	6	.....	.....
STRUCTURAL CONDITION—6 Points	(6)	( )	( )
15. Material (Indicate whether wood, brick, stone, concrete), no decayed wood, walls, floors, ceilings in good condition..... (Discredit ¼ point for papered walls or ceilings)	3	.....	.....
16. Size of Rooms, height of ceiling, not less than 9 feet..... (Discredit ¼ point for each foot deficient)	1	.....	.....
17. Floor Space (no room less than 120 sq. ft.)..... (Discredit proportionately for each room less than 120 sq. ft.)	2	.....	.....
HOUSE APPURTENANCES—26 Points (Discredit total score in each case if appurtenance not provided)	(26)	( )	( )
18. Bath..... (Discredit 2 points for common bath)	4	.....	.....
19. Closet in dwelling..... (Discredit 1 point for common closet, 2 for outhouse, with sewer connection, 3 without sewer)	4	.....	.....
20. Sink..... (Discredit ½ for common sink)	1	.....	.....
21. Laundry..... (Discredit ½ for common laundry)	1	.....	.....
22. Running water in house..... (Discredit 1 point for common hydrant, 2 for hydrant outside, 3 for well outside)	4	.....	.....
23. Condition of Appurtenances, good material and workmanship, all pipes exposed.....	6	.....	.....
24. Quality of Water for drinking.....	3	.....	.....
25. Quality of Water for bath and laundry.....	3	.....	.....
DWELLING TOTAL.....	100	.....	.....

COST OF HOUSING

Rent per month $..... **Rental value (if occupied by owner) $**.....

Unit of Comparison	Nominal Rent	Real Rent
Rent per room	$.....	$.....
Rent per 100 sq. ft.	$.....	$.....
Rent per 1,000 cu. ft.	$.....	$.....

.....

Probable income of family per month $.....

The foregoing applies solely to the house itself or to the landlord as responsible for the house. But the conditions of health and the cost of housing are modified by the attitude and circumstances of the occupants. These should be separated from the other problem by means of a separate score card. Here the problem of "congestion of occupancy" is paramount, and the unit of comparison is the "rent per occupant." The actual score on the "occupant" card becomes a coefficient of the actual score on the "dwelling" card, and this combined score gives the grading of the unit of housing accommodation as provided by the landlord and modified by the tenant. If, for example, two houses are scored 80 and 50 respectively on the "dwelling" card, and the occupants of each are scored alike at 70 on the "occupant" card, then the combined dwelling and occupant scores are 56 and 35 respectively. If, then, the nominal rent is $2.00 per occupant, the real rents are $3.57 and $5.71 per occupant, compared with $2.00 for the standard dwelling occupied by the standard tenant.

II.—OCCUPANTS—100 POINTS	Possible Score	Points Deficient	Actual Score
CONGESTION OF OCCUPANCY—61 Points	(61)	( )	( )
Occupants, number			
Family, 10 years old and over, male			
" " " " " " female			
Lodgers, Domestics, 10 years old and over, male			
" " " " " " female			
Children under 10 years			
Total (Child under 10 as ½ person)			
1. Cubic Air Space (average height of ceiling by total floor space), cu. ft.			
Cu. ft. per occupant.....No discredit if 1000 or over...	50	.....	.....
(Discredit 1 point for each 20 ft. below 1000, e.g., 600 cu. ft. discredit 20 points, leaving actual score 30)			
2. Sleeping Rooms per occupant	11	.....	.....
(Discredit 1 point for each person in excess of number sleeping rooms)			
CONDITION OF AIR AND VENTILATION—18 Points	(18)	( )	( )
3. Windows, kept open to fresh air			
Living rooms	3	.....	.....
Sleeping rooms	6	.....	.....
4. Temperature, kept even, not excessive heat or cold	3	.....	.....
5. Dust, care in avoiding dust by sweeping, no home workshop	6	.....	.....
CLEANLINESS, care and attention, no rubbish, dirt, grease or refuse,—21 Points	(21)	( )	( )
6. Hallways	3	.....	.....
7. Floors	3	.....	.....
8. Walls	3	.....	.....
9. Plumbing	6	.....	.....
10. Yard	6	.....	.....
OCCUPANTS TOTAL	100	.....	.....
Rent per occupant, nominal..... $			
Real rent per occupant (compared with standard).... $			

The foregoing scheme of standardization has been submitted to a number of hygienists and economists, and, while there is a variety of opinion regarding details, there is a striking unanimity as to the need and value of standardization itself. If the matter were to be taken up in a comprehensive way, there is no reason why standardization should not be established in hygiene and economics as it is in agriculture and engineering.

DEVICES FOR AVOIDING ERROR.

By George K. Holmes.

A deal of drudgery should accompany the tabulation of statistical material, the preparation of printer's copy derived therefrom, and the verification of proofs. During many years of contact with professors and students of colleges and universities, with officials of State bureaus of labor, and with persons, official and unofficial, engaged in statistical work, the writer has often observed a want of safeguards against error. Instead of assuming, as should be assumed, that every conclusion is wrong until fortified by verification, it is not infrequently the habit of workers to regard results as true if obtained by themselves. What statistician of experience has not heard a clerk say, "I am sure that this is right, because I did it myself," or "I never make an error"? Such clerks are the most dangerous ones in a statistical office, and are not to be trusted at any time or for any purpose, unless under precautions beyond their control or even knowledge.

A common method of verifying a copy of a statistical table and of text relating thereto, as well as of verifying a proof, is to depend solely upon reading back to copy. In consequence of this, publications, whether statistical or otherwise and whether governmental or of other origin, contain many errors. Indeed, some publications are really "honey-combed" with errors. The report of the census of agriculture of a certain State contains a series of tables in which there is a presentation of number of acres and numbers of units of production of principal crops by counties,—simple statements, covering no great number of pages. The accuracy of the publication being called in question, an attempt to prove the additions resulted in the discovery of many hundreds of errors on the face of the tabu-

lar statements. No one familiar with precautions against errors in statistical work could have any confidence in the accuracy of the work that produced those tables.

It is a common observation in the use of statistical matter published by State bureaus of labor, boards of agriculture, other State offices, and, indeed, by some national offices, that there has been a failure to follow a safe course of procedure in office work and in verifying printed matter, and the published productions of college and university professors and students are far from being exempt from this characterization.

The observation of the writer has been that professors and graduate students of universities and colleges possess a mind trained to establish facts, but one almost without precautions to preserve facts in their transfer from the primary source to the stereotyped printed page. It is no attempt at exaggeration to say that a girl graduated from a high school not longer than one or two years previously can better be trusted to safeguard the transfer than they can.

A common sole reliance for the verification of a copy or of a proof is a reading back to the original. This proceeding is fraught with errors. While it is wise to read back to copy or to original to discover the bulk of the errors, a sole dependence upon this proceeding is sure to leave many errors undiscovered.

Such being the general situation, an excuse is offered for the presentation of a formulated description of precautions against error in the statement that follows. These are based upon the many years' experience of the writer and of other persons engaged in statistical work. They may be depended upon to eliminate error almost completely. The qualification "almost completely" is made because there are two or three sources of error which no prevision can avoid, namely: (1) the concerted dishonesty of workers; (2) compensating errors, as when a plus error is counterbalanced by a minus error,—a very rare occurrence, yet one which may and does occur; and (3) the repetition of an error in the same place by different persons working at different times and independently of each other. The last error is exceedingly rare, and yet it does occur. An instance

is called to mind in which a series of percentages were computed, all proving to 100 after justification. Three persons performed this work, the results of each being unknown to the others, and the results were the same in every particular; yet a fourth person repeating the operation discovered a common error which the preceding three had committed. An experience of this sort might not be repeated probably in a lifetime.

For the use of practical workers in statistics, whether in educational institutions or in government offices, who are relying solely upon their own work and upon reading copies and proofs back to originals, the following is offered:—

RULES TO GOVERN WORK.

Table-making:

Table-making generally to be in duplicate when feasible; when not, the figures, additions, and computations to be verified by a second worker.

When tables are made in duplicate or are to be copied, having columns without totals, the columns are to be added to get totals for "check" purposes.

In comparing duplicate tables, or in verifying a table, or in verifying a copy of a table or of text, do not erase a figure supposed to be wrong: use red ink to correct it above.

Use red ink for total lines.

Persons who do duplicate work, or first work and its verification, are not to confer with each other concerning differences nor to consult with each other before finishing work.

The initials of each person doing work should appear at an upper corner of the first sheet, together with a statement as to what work was done: thus, "Compiled," "Verified," "Compared," etc.

Making and verifying copies of tables:

Do not copy total lines; get totals by adding copy and compare with original.

If original has no total lines, add to get them for "check" purposes; also add the copy, and compare.

Read copy back to original before adding.

Text "copy":

To be verified from accompanying tables or from original sources.

A copy of this to be verified by at least one reading back and by procedure of preceding paragraph.

First galley proof of tables and text:

Read critically, and make thereon all superficial corrections.

Copy on retained proof or elsewhere for future use the "check" totals of tables of printer's copy.

First page proof of tables:

See that all corrections indicated on galley proof have been made.

Add columns to prove to total lines and to "check" totals.

Cross-add to total columns.

Make all computations that can be made from the proof.

First page proof of text:

See that all corrections indicated on galley proof have been made.

Make all computations that can be made from the proof.

Verify from accompanying tables and from printer's "copy."

Second page proof of tables and text:

Read last column of tables back to copy, and add. (Types will fall down and not get back to their proper places.)

See that all corrections indicated on first page proof have been made.

Departures from the foregoing are permissible for special and good reasons, depending on the importance of the work, the ability and honesty of clerks, and the practical difficulties that are encountered; but not at the discretion of any one but the person in charge.

THE COST OF MUNICIPAL GOVERNMENT IN MASSACHUSETTS.

By Edward M. Hartwell.

The caption of this article is the chief title of Public Document No. 79, 1908, whose sub-title is "First Annual Report on the Comparative Financial Statistics of the Cities and Towns of Massachusetts, covering Municipal Fiscal Years ending between Nov. 30, 1906, and April 1, 1907, by the Chief of the Bureau of Statistics of Labor."

This is a noteworthy publication by reason of its significance as well as on account of its contents. It signalizes the opening of a new chapter in the official statistics of Massachusetts, and is indicative of the recognition by the legislature,—belated, to be sure, but still welcome, after four years of urging—of the need of a comprehensive, authoritative annual survey of the financial operations of the cities and towns of the Commonwealth, in addition to the statements of their debts, sinking funds, liabilities, and assets which have been published annually for many years by the Tax Commissioner.

This report makes it possible for the first time to obtain a clear view of the receipts and expenditures of each and all of the municipalities of the Commonwealth without engaging in the ungrateful task of attempting to reduce the reports of 33 cities and 321 towns to a uniform basis in order to extract comparable data.

It is true that at rare intervals incomplete statements of the expenditures of the municipalities of Massachusetts have appeared in public documents, but such statements have differed materially from one another in their scope and in the method of their presentation. Thus, in the report of the Metropolitan District Commission of 1896, certain classes of expenditure of

the twenty-nine cities and towns embraced in the proposed Metropolitan County were set forth for the year 1895; and the total expenditures of each of the cities and towns of the Commonwealth for 1900 were given in the Bulletin of the Bureau of Statistics of Labor for 1905, but without further analysis than sufficed to show how much each municipality expended for charity in that year.

Although the series of reports on the "Statistics of Cities" published by the United States Department of Labor and the Federal Bureau of the Census afford material for showing receipts by sources and expenditures by principal objects, by years, for the period 1898–1906, for the principal cities of Massachusetts, those publications do not serve for the preparation of comparative statements covering all of the cities, not to speak of the towns of the State, since, as a rule, those publications take no account of cities having less than 25,000 inhabitants.

This report should be welcome also to students of municipal affairs outside of Massachusetts, because it affords information regarding the cost of government of fourteen cities of Massachusetts (having an aggregate population of 144,895 in 1905) that are not included in the tables published by the Bureau of the Census. In any survey or study of the political, social, or financial characteristics of American cities, the cities of Massachusetts perforce command attention both on account of their number and variety and of the influences which have shaped their organization and determined their growth and development.

In no other State but Rhode Island do we find so large a proportion of the population living under urban conditions or governed under city charters. If we adopt the nomenclature of the United States Census, and class all communities as urban whose population amounts to 8,000, the aggregate urban population in fifty-six municipalities of Massachusetts in 1900, according to the Twelfth Census of the United States, constituted 76 per cent. of the whole population. On the other hand, if the Massachusetts standard—namely, incorporation under a city charter of municipalities having at least 12,000

inhabitants—be adopted, it appears that in 1905, when the last State census was taken, 67 per cent. of the population and 76 per cent. of the assessed valuation of the Commonwealth were found in thirty-three cities, ranging in population from 595,380 in Boston to 14,073 in Marlborough. Moreover, there are eleven towns, with an aggregate population of 153,011 in 1905, that might claim a city charter, if they chose to, on the sufficient ground of having 12,000 inhabitants. There are also seven towns of from 10,000 to 12,000 inhabitants, having a total population of 76,796. In short, 75 per cent. of the inhabitants of Massachusetts were found, in 1905, in fifty-one cities and towns of 10,000 population or upwards.

In the period 1875–1905, the proportion of the population living in towns of less than 5,000 decreased from 32.83 to 14.28 per cent., while the proportion of persons living in municipalities of over 20,000 rose from 45.26 to 64.44 per cent., and the proportion of persons living in places of more than 30,000 increased from 38.30 to 57.77 per cent. of the total population of the State. He would be a bold man, indeed, who should venture to claim that town and city government had undergone a proportionate improvement during the same period. The growth of urban communities has been too recent and rapid in Massachusetts, as in most States of the Union, for urban traditions to find a congenial soil in which to strike root and flourish. It is hardly a Hibernicism to say that in the United States urban traditions are rural. The inefficiency of city government, which is so much bewailed, is in no small measure attributable to the inevitable inability of incompletely transformed countrymen to adapt outworn and obsolete governmental methods and instruments to modern and urban needs.

Despite the venerable age of the Commonwealth the cities of Massachusetts are relatively immature and still possess features indicative of their rural origin and incomplete development. All of them have assumed the habiliments of city government since 1822, the year in which Boston obtained the first city charter ever granted by the legislature.

Under the Constitution of Massachusetts, from its adoption in

1780 until it was amended in 1821, the only recognized units of local government were "towns, districts, or plantations." The second article of Amendment of the Constitution, adopted by the people April 9, 1821, provided that

> the General Court shall have full power and authority to erect and constitute municipal or city governments, in any corporate town or towns in this Commonwealth; and to prescribe the manner of calling and holding public meetings of the inhabitants, in wards or otherwise, for the election of officers under the constitution, and the manner of returning the votes given at such meetings. Provided that no such government shall be erected or constituted in any town not containing twelve thousand inhabitants, nor unless it be with the consent and on the application of the majority of the inhabitants of such town. And provided also that all by-laws, made by such municipal or city government, shall be subject, at all times, to be annulled by the General Court.

The foregoing provisions of the Constitution are still in force, and constitute the nearest approach to a municipal code that the State possesses. The acts of legislature relating to elections, railroads, taxation, and the militia, have all been codified, but not the mass of special acts relating to cities. There is a family likeness in the city charters of Massachusetts, but they have been so amended and modified that their division into genera and species would be a huge and puzzling task. The individualistic nature of Massachusetts municipalities is nowhere more characteristically illustrated than in their financial operations and reports.

It is probable that the proposal to authorize the incorporation of cities by the legislature originated in Boston, but it is certain its principal advocates in the convention were from Boston and Salem, then the two most populous towns in the State. The main argument, that urged by Mr. Lemuel Shaw, of Boston, later chief justice of the Supreme Judicial Court, was that the Constitution, as it stood, "required a form of government not adapted to the condition of a populous town," although he declared that "in this Commonwealth every town is, to all substantial purposes, a city." The remedy required

was "such an organization as is adapted to the condition of a numerous people, such an organization as will admit the inhabitants to meet in sections for the purposes of election, and choose representatives who should meet for purposes of deliberation, instead of the whole body." The convention agreed, by a vote of 223 to 140, to recommend the amendment to the people; but so strong was the predilection of the people for town government, as they knew it, that the amendment was adopted by the bare majority of 62, in a total vote of 28,674. It may be noted, however, that in Boston the vote was 2,462 for the amendment, and only 185 against it. The vote on the proposed amendments to the Constitution was taken throughout the State on April 9, 1821. Before the year was out, a committee, of which Mr. Shaw is reputed to have been the leading mind, reported a form of city charter to the Boston Town Meeting.

Boston outgrew its swaddling-clothes long before its inhabitants could be induced to assume garments suited to its enhanced stature. By 1820, as the Federal Census of that year showed, its population was 43,298. Increase of population and the resulting demands for more elaborate methods of administration had led to its division into wards and to the devising of organs of government not found in the primitive town. The Selectmen, chosen annually in town meeting, no longer exercised full control, subject to the Town Meeting, over the affairs of the town. The Overseers of the Poor and the Board of Health each exercised a semi-independent jurisdiction, and was allotted a special appropriation. Each was composed of representatives of the several wards. The members of the Board of Health were elected, as were the Assessors, in ward meetings. The Selectmen were members of the School Committee, whose other members were chosen out of the several wards by the Town Meeting. The budget annually submitted to the town was framed by a Finance Committee, composed of the Selectmen, Overseers of the Poor, and the Board of Health, which in joint convention chose the Town Treasurer and Collector. The County Treasurer was elected by the town. Boston

paid practically all of the expenses of the County of Suffolk, the management of whose pecuniary concerns was vested by law in the Court of Sessions, composed of five judges, who were "not accountable to the two towns [Boston and Chelsea], of which the County was composed, for any of their proceedings," and had "sole and exclusive authority to direct the County Treasurer in all the business of his office."

The town had repeatedly voted down plans looking to the organization of a city government. Its willingness in 1821 to ask the legislature for a city charter seems to have been prompted, in some measure at least, by its desire to get rid of what it claimed was the anomalous and extravagant commission government exercised by the Court of Sessions. At any rate, the report on October 22, 1821, of a committee appointed "to apply to the Court of Sessions, for a statement giving the details of the expenses of the County of Suffolk," led the town to constitute a committee "to report to the Town a complete system relating to the administration of the Town and County which shall remedy the present evils." The committee, which reported on December 10, was further charged "to report a system of Municipal Government for this town, with such powers, privileges and immunities, as are contemplated by the amendment of the Constitution, authorizing the General Court to constitute City Government." Accordingly, the draft of a charter was submitted to the town on December 31, 1821, which, after some alterations "by the Inhabitants," was accepted by a Special Town Meeting held January 22, 1822. This instrument was, in effect, the charter granted to Boston by the legislature, February 23, 1822 (Chapter 110, Acts of 1821–22), under which Boston's first City Government was organized May 1, 1822. Salem was the first town to follow Boston in procuring a city charter, but not till 1836, although it had had upwards of 12,000 inhabitants since 1810.

The following extracts from the Revised Laws of Massachusetts, 1902, may serve to show how tenaciously the lawgivers of the State cling to their predilection for the conceptions and forms which underlie town government. Chapter 25 is

entitled "Of Towns and Town Officers," and Chapter 26 is entitled "Of Cities." Section 2 of Chapter 26 runs as follows:—

> Chapter twenty-five and all other laws relative to towns shall apply to cities so far as consistent with the general or special laws relative thereto; and cities shall be subject to the liabilities, and city councils shall have the powers, of towns; the mayor and aldermen shall have the powers and be subject to the liabilities of selectmen, and the city clerks, treasurers, and other city officers, those of corresponding town officers, if no other provisions are made relative to them.

The cities of Massachusetts are not yet sufficiently mature to breed their own citizens. In 1905 the aggregate enumerated population in thirty-three cities was 2,024,325; but only 766,442, or 37.86 per cent. of that number, were natives of the cities in which they lived; 577,730, or 28.54 per cent., born elsewhere than in the cities where they resided, were natives of the United States; and 680,153, or 33.60 per cent., were foreign-born. Or, to state the matter differently, out of 2,024,325 persons resident in the cities of Massachusetts, 1,257,883, or 62.14 per cent., were immigrants, and 680,153 were foreign-born immigrants. The aggregate population of the 321 towns amounted to 979,355, of which 237,891, or 24.29 per cent., were foreign-born, 403,401, or 41.19 per cent., were born elsewhere in the United States than in the town where they were found by the census enumerators, while 338,063, or 34.52 per cent., were natives of the town in which they lived.

The proportion of inhabitants who were born in their home city varies considerably. Thus in Boston, in 1905, it was 42.90 per cent. of the whole population, while in certain cities adjoining Boston it was less; *e.g.*, 29.59 in Chelsea, 28.64 in Newton, 24.30 in Medford, and only 18.53 in Everett. Each of the four cities, it may be noted, is considerably younger than Boston, and has latterly grown considerably faster. Moreover, in Medford 49.80 and in Everett 49.41 per cent. of all persons reported by the census as engaged in gainful pursuits were reported as working in Boston. In the towns of Revere and Winthrop more than half of their working population was

reported as "working in Boston." In Revere 17.33 per cent. of the total population were born there, and in Winthrop only 17.70 per cent. were natives of Winthrop.

In twelve cities outside of Boston, but within ten miles of the State House, having an aggregate population of 487,753 in 1905, only 148,260, or 30.40 per cent., were natives of their home city; while in the other twenty cities outside the ten-mile circuit, with 941,192 inhabitants, 362,743, or 38.50 per cent., were born in the city in which they lived.

The possession of special funds derived from an unusual source seems to exert a peculiar influence upon untrained and careless financiers. For instance, in 1710/11 Boston sold certain lands known as the Blue Hill Lands, situated in the town of Braintree, for £1,500. They were common lands which Boston had retained in 1640 (when Braintree was set off from Boston), and set apart for the benefit of its Free School. The town voted, May 9, 1710, that the £1,500 should be "invested and laid out in some Real Estate for the use of the Public Latin School, . . . the principal stock not to be diminished." A Special Committee and the Selectmen were empowered to invest the money, which was to be paid in instalments, and to let the proceeds at interest pending their investment in real estate. But the committee and the Selectmen voted, March 23, 1712/13, "to take at interest so much of the Blue Hill money as is now in the Treasury with what is shortly to be paid by the Braintree men, for discharge of the debts and growing charges of the Town until the Select Committee and Selectmen shall recall the same."

In August of the same year £600 were applied to the purchase of corn, on condition that it be returned with interest. In December, 1713/14 the committee and the Selectmen voted to apply, under similar conditions, £100 for the purchase of a water engine, "already secured by the Selectmen." June 13, 1714/15, the town voted that the vote of May 9, 1711, "be Reassumed," and that "the produce of the Blue Hill Lands shall be applied for the purchasing of corn or other provisions as the Town shall direct." Thus the fund came to be used as

capital for supplying the town with grain,—a policy followed for upwards of fifty years. It is probable that the sums borrowed from the fund in the interval, 1712–1715, were repaid, but it does not appear from such records as are accessible that the Public Latin School derived any benefit from the fund, though it may have.

The report under review affords curious proof of the survival of primitive notions and practices as to the management of special funds by fiscal officers. Part IV., pages 2211–2258, is devoted to statements of the Public Debt and Sinking Funds of Cities and Towns. The purposes for which the debt outstanding in 1906 was created are quite fully set forth. Among such purposes the rubric "Trust funds borrowed for municipal purposes" challenges attention quite as sharply as "No Debts" in the case of sixty-two towns, ranging in population, in 1905, from 6,754 in the case of Bridgewater to 87 in Mount Washington.

The following statements compiled from the tables referred to speak for themselves:—

A. CITIES OF MASSACHUSETTS INDEBTED TO TRUST FUNDS, 1906.

Name of City.	Population (1905).	Amount Borrowed from Trust Funds for City Purposes. (Outstanding in 1906.)
1. Fall River	105,762	$107,708
2. Lowell	94,889	36,000
3. Salem	37,627	85,000
4. Fitchburg	33,021	48,580
5. Gloucester	26,011	34,700
6. Medford	19,686	37,294
7. Newburyport	14,675	79,750
8. Marlborough	14,073	12,456
Totals	345,744	$441,488

B. TOWNS OF MASSACHUSETTS INDEBTED TO TRUST FUNDS, 1906.

Name of Town.	Population.	Amount Borrowed from Trust Funds for Town Purposes.
1. Leominster	14,297	$39,239.00
2. Clinton	13,105	4,825.00
3. Framingham	11,548	38,466.92
4. Methuen	8,676	3,378.76
5. West Springfield	8,101	8,603.31
6. Milton	7,054	26,397.61
7. Braintree	6,879	22,500.00
8. Andover	6,632	25,000.00
9. Stoughton	5,959	25,000.00
10. Winchendon	5,933	9,665.00
11. Westborough	5,378	4,000.00
12. Grafton	5,052	6,360.00
13. Millbury	4,631	8,135.00
14. Provincetown	4,362	8,155.00
15. Barnstable	4,336	20,361.37
16. Warren	4,300	15,226.74
17. Templeton	3,783	3,401.20
18. Manchester	2,618	1,309.22
19. Hopkinton	2,585	8,186.00
20. Lancaster	2,406	5,260.00
21. Charlton	2,089	2,600.00
22. Sharon	2,085	14,194.23
23. Southborough	1,931	3,750.00
24. Bourne	1,786	3,325.00
25. Chatham	1,634	8,904.46
26. Norwell	1,534	3,300.00
27. Sterling	1,315	3,300.00
28. Sudbury	1,159	26,453.00
29. Wellfleet	958	1,753.02
30. Wenham	924	3,475.00
31. Princeton	907	1,000.00
32. North Reading	903	3,000.00
33. Ashby	865	1,166.60
34. Lanesborough	845	7,255.69
35. Truro	743	1,400.00
36. Phillipston	442	430.00
Totals	147,755	$360,622.13

One is inclined to suppose that the unvarnished statements of Mr. Gettemy's tables, showing the recourse of so many cities and towns to their trust funds in order to eke out their income, should tend to discourage, if not abate, such practices. But the truth is that evidence of such practices has been furnished for

some years by certain tables contained in the annual reports of the Tax Commissioner of Massachusetts, only one must read between the lines to apprehend the tables.

If one takes up at random a report of the Tax Commissioner (Public Document No. 16),—*e.g.*, that of 1899,—he will find statements of the assets and liabilities of all the towns and cities of the State, arranged under one alphabet. In the majority of cases in which "trust funds" are reported, the entries on both sides of the statement balance exactly. In certain cases the liability exceeds the asset; *e.g.*, that of Worcester, which in 1899 had trust funds amounting to $304,724 among assets, against "Trust Funds" $363,547 under liabilities. For 1906, the corresponding entries are $322,571 and $443,610, respectively. In 1907 the amount of trust funds is $474,801 on both sides of the account. Again, in the report for 1899 Medford's assets include nothing for trust funds, but $46,376 appears among its liabilities under trust funds. In 1906 the corresponding entries were nothing and $37,294. In the case of Salem, in 1899, assets and liabilities, as regards trust funds, each amounted to $105,425. In 1905, Salem was reported as having $95,000 of liabilities for trust funds, with no trust funds on the assets side, while in 1906 the liability is $90,000, and again no trust funds among its assets.

The Tax Commissioner's report for 1906 showed thirty municipalities to be indebted to their trust funds. In eight of them the liabilities greatly exceeded the assets, while the remaining twenty-two were reported as having no trust funds among their assets. The names of eight municipalities in the 1906 list are found in the corresponding list for 1899. It would appear from the reports of the Tax Commissioner, as well as from the tables introduced above based on Mr. Gettemy's tables, that the custom of borrowing from trust funds for municipal purposes (whose precise nature cannot be determined from either set of tables) is fairly common among both the cities and towns of Massachusetts.

It may be noted, in passing, that the reports for 1906 of the Tax Commissioner and the Bureau of Statistics of Labor do

not agree either as to the number of cities and towns which were indebted to their trust funds or always as to the amounts of such indebtedness when the names of the municipalities are found in both reports. The discrepancies may be accounted for, perhaps, by reason of the reports covering different intervals of time and of differences of method in securing the data on which the respective tables are based. If an analysis could be had showing the nature of the objects to which the sums borrowed from trust funds were applied, it would doubtless be instructive.

Boston has been loudly and frequently criticised for issuing bonds to meet various current expenses. Mr. Gettemy's tables show that in 1906 the following-named cities had created debt to meet assessments levied by the Commonwealth on account of the system of Metropolitan Parks:—

DEBT OUTSTANDING IN 1906 FOR METROPOLITAN PARK ASSESSMENTS.

Name of City.	Amount of Debt.
Cambridge	$46,000
Lynn	23,000
Newton	29,000
Medford	27,000
Somerville	23,000

In this connection it may be remarked that it can be shown, from their financial reports, that nearly half of the cities of the Commonwealth have, in recent years, issued bonds to meet the cost of paving and making other repairs upon their streets.

Borrowing from trust funds for municipal purposes and the creation of funded debt to defray current expenses are indications of the strong aversion common among city and town officials to meet enhanced expenses by increasing the tax levy. Pay as you go, seems not to be a popular maxim in this generation. Perhaps it never was anything but a counsel of perfection.

The following statement shows the length to which some Massachusetts cities are willing to go rather than increase the tax rate. The figures are taken from the official reports of the cities mentioned:—

LOANS ISSUED TO MEET DEFICITS IN APPROPRIATIONS.

Name of City.	Object of Loan.	Amount.	Year issued.
Lowell	Department Deficiencies	$54,000	1905
Lowell	General Treasury Deficiency	71,000	1906
Lynn	Municipal Deficiency	56,000	1897
	" "	35,500	1898
	" "	20,000	1900
	" "	26,000	1902
	" "	8,000	1903
	" "	8,000	1904
	" "	6,000	1906
Quincy	Poor Department Deficiency	3,000	1904

Part III. of Mr. Gettemy's report comprises three tables, namely: A, showing the gross debt, sinking funds, and net debt, etc., of the thirty-three cities, ranked according to the percentage of net debt to valuation; B, in which the same facts are set forth for 259 towns; and C, giving the population and valuation of sixty-two towns having no debt. But Mr. Gettemy warns his readers that the statistics of A and B "cannot have a secure scientific basis, for the reason that the valuation figures of the various municipalities are not fixed by any central authority." Freedom from systematic central administrative control and diversity of usage in handling their fiscal concerns is, indeed, a marked characteristic of Massachusetts municipalities as a class, although the cities, more especially the larger ones, find it necessary to make frequent appeals to the legislature for power to work out new local problems as they arise.

Section 51, Chapter 12, of the Revised Laws of Massachusetts, 1902, contain a provision, of long standing, that "the assessors of each city and town shall make a fair cash valuation of all the estate, real and personal, subject to taxation therein," and every assessor throughout the Commonwealth is required by Section 68, Chapter 25, of the Revised Laws, to take oath that he "will neither overvalue nor undervalue any property subject to taxation." The tendency of municipal officials to follow their own devices is illustrated by the following statements showing the proportion of assessed to actual value of taxable property in certain cities and towns of Massachusetts. The

statements are compiled from the *Financial and Commercial Chronicle,* published in New York City, for the years mentioned;

A. CITIES.

City.	1904.	1905.	1906.	1907.
1. Brockton	⅓ of actual value	⅓ of actual value	⅓ of actual value	as near actual value as can be ascertained
2. Chicopee	not given	not given	about ⅓ of actual value	about ⅓ of actual value
3. Gloucester . . .	about ⅔ of actual value	about ⅔ of actual value	about ⅔ of actual value	about ⅔ of actual value
4. Haverhill	about ⅔ of actual value	about ⅔ of actual value	about ⅔ of actual value	at fair cost value
5. Lawrence	about ⅔ of actual value	about ⅔ of actual value	about ⅔ of actual value	about market value
6. Lynn . . . . . (Real Estate)	about ⅔ of cash value	about ⅔ of cash value	about ⅔ of cash value	about ⅔ cash value
7. Marlborough . .	7/10 of actual value	about 7/10 of actual value	about 7/10 of actual value	about 7/10 of actual value
8. Newburyport . .	about ⅔ of actual value	about ⅔ of actual value	about ⅔ of actual value	about ⅔ of actual value
9. Northampton . .	about 80% of actual value	about 80% of actual value	about 80% of actual value	about 80% of actual value
10. Springfield . . .	about 90% of actual value	about 90% of actual value	about 90% of actual value	about 90% of actual value
11. Taunton	about 90% of actual value	about 90% of actual value	about 90% of actual value	about 90% of actual value

In the case of the remaining twenty-two cities in Massachusetts, either the proportion of assessed to actual value is not stated, or it is stated as "about full value," "full and fair cash value," "about market value," "fair cash value," "about actual value," etc.

B. TOWNS.

Town.	Population in 1905.	Proportion of Assessed to Actual Value.
1. Easthampton	6,808	about 90% of actual value
2. Framingham	11,548	about ⅔ of actual value
3. Methuen	8,676	about ⅔ of actual value
4. North Andover	4,614	about 70% of actual value
5. Norwood	6,731	about 90% of actual value
6. Rockport	4,447	about 75% of actual value
7. Southbridge	11,000	about ⅔ of actual value
8. Spencer	7,121	about ⅔ of actual value
9. Stoneham	6,332	80–90% of actual value
10. Wellesley	6,189	⅔ of actual value
11. Westborough	5,378	⅔ of actual value
12. Westfield	13,611	about ⅞ of actual value
13. Williamstown	4,425	71% of actual value
14. Winchester	8,242	about ⅔ of actual value

Another obstacle in the way of securing "complete comparability of municipal statistics," instanced by Mr. Gettemy, is the wide range in the dates at which fiscal years close. He calls attention to the fact that, in sixteen of the cities, the calendar and fiscal years coincide, while eleven close their books November 30, as does the Commonwealth; and two (namely, Boston and Waltham) close theirs on January 31. The wider range among the towns, which is set forth in detail, is attributed to their annual meetings being scattered through four months of the year. The cities have all been established since the reckoning of time in accordance with the Gregorian calendar has become a matter of course, and their preference for the modern calendar is easily explicable. Of the cities, twenty close their books in the last calendar month, two in the first calendar month, and eleven in November.

Boston's fiscal year closed on April 30, from the incorporation of the city in 1822 down to 1891, excepting the years 1823–25, inclusive. In 1892 the present termination of the fiscal year (namely, January 31) was adopted. The long-continued persistence of April 30 as the close of the fiscal year seems to be owing to the custom of the town of Boston, at least during its later years, to have the treasurer's accounts audited as of April 30, apparently that they might be considered at "the May Meeting," at which appropriations were usually voted. In Boston, even down to 1821, the March meeting, as is still the case in most towns, was considered the principal town meeting, as it was the occasion for the annual election of town officers. But it was the custom, as early as 1791 and as late as 1821, for the March meeting to vote "that the consideration of all money matters be referred to the May meeting."

The proverbial importance of the March meeting is doubtless attributable to the fact that down to 1751, when the New Style calendar year, so called, was adopted by Parliament, "the First Month" was called "March" throughout the British Colonies, as well as in the mother country.

The following tabular presentation, based on the dates of the close of the fiscal year given in Mr. Gettemy's tables, illustrates the influence of use and wont in determining the course of procedure, in the conduct of prudential concerns, in the towns of Massachusetts:—

CLOSE OF FISCAL YEAR IN MUNICIPALITIES OF MASSACHUSETTS, 1906.

	Old Style Year.			New Style Year.		
	First Month (March).	Last Month (February).	Total.	First Month (January).	Last Month (December).	Total.
Towns: number of	75	111	186	44	90	134
Cities: number of	—	—	—	2	20	22

One town closes the year on April 1, and 11 cities close in November.

The not unnatural preference of both towns and cities for closing their accounts in the last month of the year is clearly indicated by the foregoing statement.

The report under review is so well arranged and printed that it should not repel readers, as do so many American statistical publications, more particularly those of the familiar official type. It affords a good example of what may be accomplished towards making statistical text and tables readable, and even attractive, by utilizing the resources of modern typography. We venture to hope that the Bureau of Labor Statistics, in setting forth the cost of municipal government, may be enabled soon to escape the thraldom of the conventional octavo page, as has the Federal Bureau of the Census. On the whole, the correspondence in terminology and classification between Public Document No. 79 and the Federal Census Bureau's "Statistics of Cities" is sufficiently close to secure a fair degree of comparability between such tables of the two publications as cover like matters.

Another notable and praiseworthy feature of the report, a feature that might almost be characterized as an innovation, is the due prominence given to the financial operations and status of the cities as compared with the towns. The two are not printed under one alphabet, as is usually the case. Part I. consists of thirteen tables, devoted wholly to the maintenance cost, by departments, of the thirty-three cities; while six of the seven analysis tables which precede Part I. relate to cities only, and include all of the cities. Again, in Part II., which is made up of summarized statements (modelled on the group system of the National Municipal League as modified by the Bureau of the Census) of receipts and payments by cities and towns graded according to population, the cities are placed first in a group by themselves. The same system of grouping obtains, also, in Parts III. and IV., devoted respectively to Municipal Indebtedness Compared with Assessors' Valuations and Public Debt and Sinking Funds.

The usefulness of the tables is materially enhanced by an introduction, in which the sources, character, and limitations

of the tables are frankly discussed, and certain recommendations, involving legislation, are made. Comments and comparisons based on the salient facts brought out by the tables are of frequent occurrence in the text. However, Mr. Gettemy is cautious in interpreting his tables, and careful to point out pitfalls that headlong devotee of the vain comparative might naturally fall into.

As might be expected, in compiling its first report in a new field, the Bureau has encountered difficulties in securing completely comparable data from towns and cities whose fiscal operations and original accounts are far from perfectly adapted to readily furnishing abstracts in conformity with the uniform schedules sent out by the Bureau. After Mr. Gettemy became Chief of the Bureau, it was decided to modify the original schedule sent out in 1906 by his predecessor to the cities, but, to avoid undue delay, it was not considered advisable to modify the schedules used in securing returns from the towns.

The receipts and payments of all cities are totalized in a recapitulatory statement, but a similar statement for all towns is not given lest incorrect comparisons between cities as a group and towns as a group should be made. But assurance is given that in the next report "the statistics for the towns will be classified in uniformity with those for the cities, and the Bureau will be able to present a consolidated balance sheet showing the aggregate receipts and expenditures for all of the municipalities."

By reason of the numerous and radical plans proposed recently for reforming the government and financial operations of Boston and the region roundabout, unusual interest attaches at present to the so-called Metropolitan District; *i.e.*, the thirty cities and towns, including Boston, which are situated within ten miles of the State House. Furthermore, the Metropolitan District is deserving of special study because within the jurisdiction of its thirteen city and seventeen town governments, which amount to nearly one-tenth of the whole number in the State, four-tenths of the population, four-tenths of the registered voters, and six-tenths of the assessed valuation of the

TABLE I.

III. TOTAL PAYMENTS FROM REVENUE, AND FOR PRINCIPAL OBJECTS, METROPOLITAN DISTRICT, 1906

Cities, Towns and Zones	Total Payments from Revenue	Payments for: All Departments	General Administration	Highways and Bridges	Education	Interest	Protection of Life and Property	Charities and Correction
Boston	$26,883,758 32	$19,709,976 52	$1,288,157 26	$2,947,0 0 75	$3,743,646 30	*$3,287,255 80	$3,604,671 83	$1,227,897 69
First Zone								
1. Cambridge	$2,819,691 95	$1,931,219 98	$112,216 85	$404,875 39	$504,835 69	$239,769 35	$312,630 53	$48,596 59
2. Somerville	1,489,901 17	1,044,774 92	68,939 92	169,625 34	344,905 45	74,110 15	177,400 31	30,044 32
3. Chelsea	952,335 37	625,527 59	39,437 43	150,417 00	167,115 61	70,077 54	106,083 01	19,513 18
4. Newton	1,539,600 74	1,123,723 37	62,974 81	230,030 88	260,801 72	250,194 28	148,311 23	23,444 72
5. Quincy	729,044 72	465,561 56	33,712 84	82,884 97	125,409 54	78,618 17	63,163 79	11,831 62
6. Everett	693,712 02	467,696 43	28,277 82	66,674 93	170,672 07	69,563 53	61,246 81	8,942 72
Total, Six Cities	$8,224,285 97	$5,658,500 85	$345,559 67	$1,104,508 51	$1,573,740 08	$782,333 02	$868,835 68	$142,313 15
1. Brookline	$1,326,332 85	$795,473 30	$67,014 77	$190,007 56	$207,705 82	$53,042 77	$167,439 89	$7,485 13
2. Hyde Park	275,683 09	198,014 44	14,787 16	47,703 39	63,830 67	11,878 07	33,620 79	9,759 82
3. Dedham	250,461 31	170,869 07	21,667 86	37,683 49	55,210 45	13,296 25	22,942 24	7,715 28
4. Watertown	409,220 48	223,006 38	14,711 17	67,697 09	51,669 47	21,073 19	29,265 25	12,163 09
5. Needham	122,735 52	75,551 29	7,368 05	17,356 39	24,715 98	7,990 04	9,749 31	3,144 11
6. Milton	404,062 05	235,597 87	15,947 42	61,526 88	69,546 07	8,616 97	55,485 95	7,100 27
7. Revere	352,604 80	220,332 25	22,642 49	44,443 44	71,995 97	23,494 25	39,188 76	5,764 93
8. Winthrop	230,945 63	144,060 37	10,451 89	40,546 68	40,264 72	14,052 52	25,032 47	2,630 67
Total, Eight Towns	$3,372,045 72	$2,062,904 97	$174,590 81	$506,964 92	$584,939 15	$153,444 06	$382,724 66	$55,763 30
Total, Six Cities	8,224,285 97	5,658,500 85	345,559 67	1,104,508 51	1,573,740 08	782,333 02	868,835 68	142,313 15
Total, First Zone	$11,596,331 69	$7,721,405 82	$520,150 48	$1,611,473 43	$2,158,679 23	$935,777 08	$1,251,560 34	$198,076 45
Second Zone								
1. Lynn	$1,785,175 10	$1,130,958 71	$84,782 44	$230,206 59	$287,306 00	$129,669 15	$220,570 44	$36,708 66
2. Malden	1,006,600 88	600,537 68	53,611 75	121,151 80	203,072 77	47,175 08	85,495 26	22,809 98
3. Waltham	563,339 71	377,542 83	32,483 05	74,923 23	102,668 44	36,587 02	57,893 05	10,591 33
4. Woburn	339,766 04	237,976 64	26,874 71	44,367 63	63,876 50	16,168 96	33,390 82	15,152 28
5. Medford	957,549 64	449,456 49	27,613 84	109,099 55	121,654 67	71,337 51	51,706 41	9,744 85
6. Melrose	500,851 30	272,148 90	16,845 60	73,307 18	82,418 64	30,334 39	24,745 74	9,412 81
Total, Six Cities	$5,303,282 76	$3,068,621 34	$234,210 48	$653,145 98	$860,897 02	$331,272 66	$473,802 02	$104,419 91
1. Wakefield	$262,774 73	$148,738 48	$10,865 80	$20,060 32	$35,254 74	$24,227 18	$19,458 00	$10,163 61
2. Stoneham	168,968 65	94,784 44	7,074 02	21,153 59	30,032 91	7,081 45	11,398 03	7,509 92
3. Arlington	322,657 22	208,293 72	16,680 80	60,067 34	60,045 48	15,372 60	31,323 21	8,066 43
4. Winchester	263,694 21	175,084 13	12,202 88	53,051 23	52,884 22	25,953 68	16,600 89	7,501 24
5. Saugus	130,444 76	111,669 27	8,322 25	33,536 22	32,045 22	10,586 27	10,289 14	11,668 08
6. Lexington	182,665 23	119,363 01	7,968 21	44,284 42	31,952 21	6,394 72	16,598 00	6,321 00
7. Swampscott	189,188 30	117,346 02	7,901 73	32,481 97	31,657 81	14,615 68	16,382 03	2,376 38
8. Belmont	156,563 70	88,416 99	8,618 44	22,418 53	25,653 08	9,941 78	8,701 23	4,551 13
9. Nahant	111,559 86	61,375 68	7,976 55	21,127 87	8,802 77	1,792 43	12,866 20	317 57
Total, Nine Towns	$1,788,416 74	$1,124,971 24	$87,030 86	$308,190 43	$328,348 04	$115,965 69	$143,676 82	$58,470 36
Total, Six Cities	5,303,282 76	3,067,621 34	224,210 48	653,145 98	860,897 02	331,272 66	473,802 02	104,419 91
Total, Second Zone	$7,091,699 50	$4,192,592 58	$311,241 34	$961,336 46	$1,189,245 06	$447,238 35	$617,479 44	$162,890 27
Total, First Zone	11,596,331 69	7,721,405 82	520,150 48	1,611,473 43	2,158,679 23	935,777 08	1,251,560 34	198,076 45
Both Zones	$18,688,031 19	$11,913,998 40	$831,391 82	$2,572,809 89	$3,347,924 29	$1,383,015 43	$1,869,039 78	$360,966 72
Boston	26,883,758 32	19,709,976 52	1,288,157 26	2,947,010 75	3,743,646 30	3,287,255 80	3,604,671 83	1,227,897 69
District	$45,571,789 51	$31,623,974 92	$2,119,549 08	$5,519,820 64	$7,091,570 59	$4,670,271 23	$5,473,711 61	$1,588,864 41
13 Cities	$40,411,227 05	$28,436,098 71	$1,857,927 41	$4,704,665 24	$6,178,283 40	$4,400,861 48	$4,947,310 13	$1,474,630 75
12 Cities	13,527,568 73	8,726,122 19	569,770 15	1,757,654 49	2,434,637 10	1,113,605 68	1,342,638 30	246,733 06
17 Towns	5,160,462 46	3,187,876 21	261,621 67	815,155 40	913,287 19	269,409 75	526,401 48	114,233 66

* Does not include $123,605 paid on Suffolk County Debt, or $1,461,951.48, Assessments for Interest on Metropolitan Debts.

State were found in 1905. Hitherto—*i.e.*, prior to the publication of Mr. Gettemy's report—no specific data concerning the annual cost of government of the cities having less than 30,000 inhabitants, or of most of the towns, could be had without inordinate labor. Table I. has been compiled by the writer from Public Document 79 for a special study of the Metropolitan District. It is embodied in this article because it serves to indicate the timeliness and value of that document as a source of information. It should be added that division of the district into zones has been made because it appears from previous studies of the writer that the different sections of the district present different rates of growth in population and wealth. The first zone includes cities and towns that are contiguous to Boston, the second zone being composed of municipalities that are not contiguous to Boston, but are within the ten-mile circuit.

The population of the Metropolitan District by zones and subdivisions in 1905, and the percentage of increase, by five-year periods in the interval 1890–1905, is shown in the following tabular statement:—

METROPOLITAN DISTRICT.

	Population, 1905.	Per Cent. of Increase of Population.		
		1900 to 1905.	1895 to 1900.	1890 to 1895.
Boston	595,380	6.15	12.87	10.80
First Zone	386,018	11.28	17.35	21.92
6 cities	298,009	10.61	16.14	29.46
8 towns	88,009	13.59	21.76	0.58
Second Zone	245,460	11.07	12.89	17.06
6 cities	189,744	10.88	20.86	27.60
9 towns	55,716	11.70	7.93	*3.72
Both Zones	631,478	11.19	15.57	19.94
District	1,226,858	8.69	14.21	15.16
Boston	595,380	6.15	12.87	10.80
12 cities	487,753	10.72	17.93	28.75
17 towns	143,725	12.85	8.10	*1.44

* Decrease.

Following is a statement of the valuation and net debt of the District in 1906:—

METROPOLITAN DISTRICT, 1906.

	Valuation.	Net Debt.
Boston	$1,289,705,887	$67,834,934
First Zone	487,119,498	21,593,530
6 cities	307,156,145	17,159,984
8 towns	179,963,353	4,433,546
Second Zone	232,391,524	10,036,730
6 cities	167,546,448	6,744,655
9 towns	64,845,076	3,292,075
Both Zones	719,511,022	31,630,260
District	2,009,216,909	99,465,194
Boston	1,289,705,887	67,834,934
12 cities	474,702,593	23,904,639
17 towns	244,808,429	7,725,621

There are two other reports on financial statistics of cities for 1906 that should be mentioned here. They are the report of the Bureau of Inspection and Supervision of Public Offices of the Department of Auditor of State, entitled "Comparative Statistics Cities of Ohio 1906," and the report of the Comptroller of the State of New York, entitled "On Municipal Accounts."

The Ohio document contains a series of nine tables relating to 70 cities for the fiscal year ending Dec. 31, 1906. Of the 70 cities, 9 had 30,000 or upwards of population and 24 had 12,000 or more inhabitants. In each table the cities are arranged according to population as reported by the Twelfth Census of the United States for 1900.

The following statement shows the range of population in round numbers:—

Population (1900).	*Number of Cities.*
300,000, less than 400,000	2
100,000 " " 150,000	2
50,000 " " 100,000	1
40,000 " " 50,000	2
30,000 " " 40,000	2
20,000 " " 25,000	3
15,000 " " 20,000	7
10,000 " " 15,000	9
5,000 " " 10,000	42
Total	70

The following statement shows the number of cities in Ohio having from 5,000 to 12,000 inhabitants in 1900:—

Population (1900).	*Number of Cities.*
11,000 12,000	3
10,000 11,000	1
9,000 10,000	2
8,000 9,000	8
7,000 8,000	9
6,000 7,000	12
5,000 6,000	11
Total	46

The tables in this report follow more closely the forms and terminology of the Uniform System of the National Municipal League as recommended in 1902 (in which year the Ohio legislature enacted a bill "to establish a uniform system of public accounting, auditing, and reporting under the administration of the Auditor of State") than does either the "Statistics of Cities" issued annually by the Federal Bureau of the Census or the "Cost of Municipal Government in Massachusetts." Although this report is marked by an extreme paucity of explanatory text and an utter absence of summary tables and analyses, on the whole it resembles more nearly the Census Bureau's publications than Mr. Gettemy's report. It is more comprehensive, however, so far as it goes, than the latter, in that receipts and expenditures are more fully itemized.

The Ohio report is unlike either the Massachusetts or the New York report, inasmuch as it contains no statistics whatever relating to municipalities under town or village government; but the material which it does contain is superior, as regards congruence and comparability, to that contained in

either of the other reports. This was to be expected, partly because the Ohio bureau is older and more fully developed, but chiefly because the Ohio statute of 1902 as amended in 1904 provides for more complete, central control and supervision over the financial operations and reports of municipalities than does the New York act (Chapter 705, Laws of 1905) or the Massachusetts act (Chapter 296, Acts of 1906).

Although the Comptroller of New York "*may* formulate and prescribe a system of accounts which shall be uniform for each class of municipal corporations," namely, counties, cities of the second and third classes,—*i.e.*, all cities except New York and Buffalo,—and all incorporated villages, it is obligatory on the Auditor of Ohio to "formulate, prescribe, and install a system of accounting and reporting . . . that shall be uniform for every public office and every public account of the same class." The Massachusetts act is much milder in its terms and less comprehensive in its scope than either of the other acts mentioned.

While the tables of the Ohio report afford strict comparison of the cities of Ohio with one another, in respect to total receipts and expenditures and to specific items under each head, the total expenditures of Ohio cities, as a group or individually, cannot be compared with those of Massachusetts or New York cities for the reason that the receipts and expenditures for public schools are not given for any city in Ohio. Moreover, it would be useless to attempt to compare New York cities as a group with the cities of Massachusetts as a group, because the tables published by the Comptroller of the State of New York lack reports for 31 per cent. of the cities required by law to make report to him. The tables in the New York report, aside from their incompleteness due to the failure of the cities to conform to the law, are distinctly inferior in construction and arrangement to those contained in both of the other reports.

In the introductory portion of the New York document the Comptroller discusses, in a vigorous and pointed way, some of the reasons for the incompleteness of the statistics offered. Under the act of 1905, 57 counties, 42 cities, and 69 villages

(having a population of 3,000 or more) were required to file annual reports on forms prescribed by the Comptroller: only 39 counties, 29 cities, and 55 villages did so. "The attitude assumed by many fiscal officers in refusing or neglecting to file the required report necessitated the amendment of 1907 making such failure or neglect a misdemeanor," says the Comptroller. The Comptroller gives a list of four cities and eleven villages that "had exceeded the 10 per cent. limitation . . . and are consequently prohibited from incurring further bonded indebtedness save for purposes of water supply." He points out that most of the counties, cities, and villages received no income from interest upon deposits of public moneys.

The Comptroller's discussion of the disclosures made by his examiners relating to the confused accounts and illegal acts of the fiscal officials, in certain counties, is particularly illuminating. The Comptroller concludes that "the same general condition of negligent administration and wasteful extravagance appears to have existed in nearly all the county offices." It is clear that the Comptroller of the State of New York has a difficult problem to solve in his attempt to bring order out of chaos in county and municipal accounts and reports. His future reports will be looked for with interest.

Statistics relating to the salaries of municipal officials are rarely to be had. Therefore, Table IX. of the Ohio report, which is entitled "Statistics of Salaries, Wages, Taxation, and Improvements," is worthy of special mention. The following table showing the annual salary of certain principal officials of Ohio cities having 10,000 or more inhabitants in 1900 has been compiled from the table just mentioned. For the sake of comparison Table II. is followed by Table III., relating to the salaries of certain officials in certain cities of New York. It has been compiled from the Comptroller's Report on Municipal Accounts.

It is to be regretted that the States of Wyoming, North Dakota, and South Dakota, which have long exercised central control over municipal accounts and reports, do not publish reports similar to those considered in this article.

TABLE II.—SHOWING ANNUAL SALARIES IN 1906 IN CITIES OF OHIO HAVING 10,000 OR MORE INHABITANTS IN 1900.

	Population (1900).	Mayor.	Auditor.	Treasurer.	City Engineer.	Solicitor.	Chief of Police.
1. Cleveland	381,768	$6,000	$5,000	$4,500	$4,000	$5,000	$4,000
2. Cincinnati	325,902	6,000	5,000	3,500	6,000	5,000	6,000
3. Toledo	131,822	3,500	2,500	2,500	2,700	3,500	2,400
4. Columbus	125,560	3,600	2,500	3,000	3,000	3,500	2,200
5. Dayton	85,333	3,000	2,400	2,400	2,700	4,000	2,500
6. Youngstown	44,885	3,500	2,000	2,000	2,500	2,000	2,000
7. Akron	42,728	3,000	1,500	500	1,800	2,000	1,500
8. Springfield	38,253	1,500	1,800	500	2,000	2,400	1,500
9. Canton	30,667	3,000	1,600	1,200	1,500	2,000	1,200
10. Hamilton	23,914	*2,500	1,200	1,000	1,200	1,400	1,200
11. Zanesville	23,538	1,500	1,800	600	1,500	1,500	1,080
12. Lima	21,723	*1,500	1,500	900	1,800	1,800	1,080
13. Sandusky	19,664	*1,500	1,500	1,000	1,400	1,200	1,200
14. Newark	18,157	1,200	1,200	400	1,200	1,500	900
15. Portsmouth	17,870	1,500	1,500	600	1,200	600	1,200
16. Mansfield	17,640	†1,500	1,500	500	1,200	1,500	1,020
17. Findlay	17,613	900	1,200	500	1,200	1,000	900
18. East Liverpool	16,485	1,800	1,200	600	2,000	1,000	1,200
19. Lorain	16,028	2,000	1,200	750	1,500	1,000	1,200
20. Steubenville	14,349	3,000	1,000	500	900	800	1,200
21. Marietta	13,348	800	1,000	300	‡4.50	900	900
22. Chillicothe	12,976	†1,200	1,000	500	1,600	900	960
23. Ashtabula	12,949	1,100	1,000	500	1,200	900	1,200
24. Piqua	12,172	1,200	1,000	50	1,000	600	900
25. Massillon	11,944	1,500	800	400	1,200	600	900
26. Ironton	11,868	2,100	1,200	500	1,500	750	1,200
27. Marion	11,862	1,000	900	100	1,080	1,200	900
28. Tiffin	10,989	1,200	900	400	‡0.60	700	900

* Covers services as secretary of water-works.

† Retains fees in State cases.

‡ Per diem in Marietta; per hour in Tiffin.

TABLE III.—SHOWING ANNUAL SALARIES IN 1906 IN CERTAIN CITIES OF NEW YORK HAVING 10,000 OR MORE INHABITANTS IN 1905.

	Population (1905).	Mayor.	Comptroller.	Treasurer or Chamberlain.	City Engineer.	Superintendent of Schools.
1. Rochester	181,666	$5,000.00	$3,500.00	$3,000.00	$4,500.00	$5,000.00
2. Syracuse	117,503	4,000.00	3,500.00	3,000.00	3,500.00	4,000.00
3. Albany	98,374	4,000.00	3,500.00	3,000.00	3,500.00	3,000.00
4. Schenectady	58,369	2,000.00	1,750.00	1,750.00	3,000.00	2,750.00
1. Elmira	34,692	1,750.00	?	2,333.33	1,800.00	1,750.00
2. Auburn	33,000	?	1,500.00	1,500.00	2,000.00	?
3. Niagara Falls	26,559	999.96	?	1,500.00	2,000.04	2,300.00
4. Newburg	26,498	800.00	?	500.00	?	2,000.00
5. Kingston	25,557	?	?	1,500.00	1,200.00	?
6. Poughkeepsie	25,379	500.00	?	1,500.00	1,000.00	2,500.00
7. Mount Vernon	25,006	999.96	1,999.96	999.96	1,599.96	?
8. Amsterdam	23,943	?	?	1,200.00	1,600.00	3,000.00
9. Jamestown	22,892	500.00	1,200.00	1,200.00	1,500.00	?
10. Gloversville	18,672	?	?	1,200.00	2,500.00	2,600.00
11. Lockport	17,552	600.00	?	1,800.00	1,200.00	?
12. Middletown	15,682	300.00	?	200.00	900.00	?
13. Watervliet	14,600	1,000.00	?	1,600.00	500.00	?
14. Corning	13,515	200.00	?	?	1,500.00	?
15. Hornell	13,259	200.00	?	1,200.00	1,200.00	?
16. Cortland	11,272	?	?	900.00	436.50	?
17. Hudson	10,290	500.00	?	1,200.00	1,800.00	2,200.00
18. Plattsburg	10,184	?	?	1,200.00	?	?
19. Rensselaer	10,175	600.00	?	1,200.00	500.00	?
20. North Tonawanda	10,157	?	?	1,500.00	806.28	?

NOTE.—The first four are cities of the second and the remaining twenty of the third class.

REVIEWS AND NOTES.

The Book of Wheat. By Peter Tracy Dondlinger, Ph.D. New York, 1908. pp. 369.

While this book is not primarily a statistical treatise it contains such an abundance of valuable statistics on the subject treated and on the whole so admirably illustrates the advantages of the statistical method as an aid to clearness and accuracy in scientific exposition that there seems abundant justification for mentioning it in these publications. The author tells the story of wheat in such an interesting and at the same time instructive manner that one finds the book easy to read and at times almost fascinating.

The book is a mine of information, carefully arranged and well indexed. An exhaustive bibliography, filling twenty-seven pages in small type, makes the work an excellent guide to the investigator in any of the numerous branches of the subject. In his treatment the author has followed the natural order by first describing the grain and plant and the conditions under which it is grown, including soil, climate, methods of cultivation, etc., and then taking up in turn each stage through which it passes from producer to consumer. Numerous illustrations are introduced to show the historical development from the most primitive stages of the many tools, machines, and appliances employed in this great industry.

Many points are brought out in this book that are a revelation to the reader. We have been so impressed by the great advances made in manufacturing and transportation during and since the Industrial Revolution that we forget that agriculture has also been revolutionized, and that in no line of human activity has there been a greater lightening of human labor by the application of mechanical contrivances. One illustration will suffice to bring this home to the reader. In 1830 it required on the average 2 hours and 32 minutes of human labor to harvest and thresh a bushel of wheat, and in 1896 by the use of the combined harvester 5.6 minutes, while "the entire time of human labor necessary to produce a bushel of wheat, including sowing, reaping, and threshing, fell from 3 hours and 3 minutes in 1830 to 10 minutes in 1896." No step in the emancipation of human beings from the burden of brutalizing toil has ever been more significant than this, for it must be remembered that the labor now performed is comparatively light and agreeable, call-

ing for intelligence and not mere physical endurance, and, furthermore, that it affords an ample reward in real wages.

The book will be found useful by farmers as well as students of economics, and is a welcome addition to a growing literature on practical economic subjects. C. W. D.

NOTE ON THE POPULATION OF CHINA.

Many estimates have been made of the population of China, but until recently little of a definite or reliable nature has been known about the real numbers. There has been a growing feeling among statisticians, however, that most of the estimates are utterly unreliable, and that the figures usually given are unquestionably much too large. In view of the keen scientific interest in this question, as well as the practical importance that it has for the Western world, owing to the political and economic changes that have taken place during the past ten years in that part of Asia, it has seemed desirable to publish the latest available information in regard to this matter.

In the course of a somewhat extended correspondence with Professor W. F. Willcox, under date of Sept. 8, 1908, W. W. Rockhill, United States minister to China, makes the following observations, and submits the accompanying table in support of his views on this subject: "I am much pleased to learn that the conclusions reached by you concerning the probable population of China do not materially differ from mine. In fact, I think that they agree absolutely. According to my views, whatever the population of China was in 1842, it has not probably increased to any perceptible extent since then. I have shown that the estimates made by the Chinese, wherever Western observers have been able to look into them, should be reduced by half in many cases and in the others by, perhaps, a third. I know of no particular reason why the return of population made in 1812 should be preferred to any other, nor for that matter is there any reason for placing particular confidence in that of 1842. I have assumed that it was possibly in excess as much as 50 per cent. If I had to choose any one enumeration among those given in Chinese works, I would certainly take that of 1743 (see p. 663 of my pamphlet). I see no reason to believe that in the last half of the eighteenth century and the first half of the nineteenth there was no increase in the population of the Empire, though probably not a very large one. I think that a number of reasons might be adduced for believing that the population of China increased during that time, though that of Japan, as you say, remained stationary during that

period. Climatic as well as social and racial conditions, I think, are more favorable to an increase of population in the former than in the latter country. . . .

"The estimated population of China (including Southern Manchuria, or Shengking) is given in the 'Returns of Trade and Trade Reports, 1907,' published by the Statistical Department of the Imperial Maritime Customs (p. 40) as 438,214,000. I enclose this wildest of all estimates in case you have not seen it. The method followed in making such estimates is easily found out by comparing it with previous estimates. To show, however, the little value the Government of China put on these estimates of population, it may interest you to know that in July of this year the High Commission for the Collation of Administrative Methods and the Constitutional Commission, memorializing the Throne on the subject of the basis of representation in the Provincial Deliberative Assemblies to convene within a year, said, 'The Representation in the Provincial Deliberative Assemblies would best of all be arranged on a basis of population; but as China has not yet made a census, and as to take one now would consume too much time, the statistics of the literary examinations and the tax rolls have been taken as a basis for reckoning the number of assembly members to assign to each province.'

ESTIMATED CHINESE POPULATION OF THE SEVERAL PORTS AND OF THE PREFECTURES AND PROVINCES IN WHICH THEY ARE SITUATED.*

Province.		Prefecture.		Port.	
Name.	Population.	Name.	Population.	Name.	Population.
Shengking	16,000,000	Fenghuangting	332,000	Antung	22,000
				Tatungkou	5,000
		Fengtien (Mukden)	—	Newchwang	74,000
Chihli	29,400,000	Yungping	—	Chinwangtao	5,000
		Tientsin	—	Tientsin	800,000
Shantung	38,000,000	Tengchow	4,500,000	Chefoo	100,000
Szechuan	79,500,000†	Chungking	5,123,000	Chungking	705,000
Hunan	22,000,000	Changsha	—	Changsha	230,000
		Yochow	270,000	Yochow	20,000
Hupeh	34,000,000	Ichang	240,000	Ichang	55,000
		Kingchow	3,000,000	Shasi	85,000
		Hanyang	3,675,000	Hankow	778,000
Kiangsi	24,534,000	Kiukiang	1,752,000	Kiukiang	36,000
Anhuei	36,000,000	Taiping	417,000	Wuhu	122,000
Kiangsu	23,980,000	Kiangning	1,275,000	Nanking	267,000
		Chinkiang	—	Chinkiang	181,000
		Sungkiang	—	Shanghai	651,000
		Soochow	2,250,000	Soochow	500,000
Chêkiang	11,800,000	Hangchow	750,000	Hangchow	350,000
		Ningpo	—	Ningpo	260,000
		Wenchow	2,073,000	Wenchow	80,000
Fukien	20,000,000	Funing	900,000	Santuao	8,000
		Foochow	3,400,000	Foochow	624,000
		Chüanchow	2,900,000	Amoy	114,000
Kuangtung	32,000,000	Chaochow	—	Swatow	67,000
		Kwangchow	8,000,000	Canton	900,000
				Kongmoon	60,000
				Samchui	6,000
		Kiungchow	60,000	Kiungchow	40,000
		Limchow	500,000	Pakhoi	20,000
Kuangsi	8,000,000	Wuchow	400,000	Wuchow	59,000
		Nanning	620,000	Nanning	40,000
		Taiping	300,000	Lungchow	12,000
Yunnan	8,000,000	Linan	450,000	Mengtze	18,000
		Puerh	50,000	Szemao	15,000
		Yungchang	700,000	Tengyueh	10,000
Other provinces (Shansi, Shensi, Kansu, Honan, Kweichow)	55,000,000				
Total	438,214,000				

* 'Returns of Trade and Trade Reports,' Imperial Maritime Customs, 1907.

† Estimated by Sir A. Hosie (1904) at 45,000,000.

"Nothing has been done in the last few years, since the administrative reform of the Empire has begun, looking to the ascertainment of the population of the Empire. A few counts of the population of certain cities have been made. Though in all likelihood inaccurate, they are of considerable interest in view of the paucity of data we possess. In the early part of last year the Ministry of Domestic Affairs or Home Office (*Min-cheng Pu*) reported that the number of families in Peking was 123,790. Taking as an average per household of 5.5 head, it gives 680,-845, which, I think, is a pretty close approximation to the truth. A census was also made in 1907 of the city of Swatow. The result is curious. It is 21,782 males and 5,185 females, children included, living in 4,875 homes (5.4 head per home). In the case of the city of Mukden an official count of the population was made in 1907. It gave 158,132, of which three-fifths were males.

"As bearing on the subject generally, it is of interest to note that in August, 1907, the Japanese authorities in Korea had a census made of the people. It gave 2,233,087 houses with a population of 10,381,680,—4.15 heads to the home.

"At the present time another census of Peking is being taken. I am endeavoring to ascertain the method followed, and will let you know concerning it. . . .

"I shall be very glad at any time if I can be of any assistance whatsoever in any researches you may wish to make concerning the population of China or Eastern Asia, which is, as you say, an unsolved problem of very great interest and importance."

Writing about a month later, Mr. Rockhill submits the following table, and says in regard to it: "Since writing you last month, the Chinese 'Government Official Gazette' has published a census taken this year of the population of Peking, exclusive of suburbs. The 'family,' I think, should be counted at 5.5 heads, though some persons I have recently consulted think it may be, in the case of Peking, as high as 8.0. In view of the excessive infantile mortality here (some European medical men I have spoken to say it is probably as high as 50 per cent.), I think 5.5 is a fair average. This gives us 693,044 persons. Sacharoff gave the population of Peking within the walls, in 1845, as 1,648,814,—a figure probably 50 per cent. in excess of the truth."

CENSUS OF FAMILIES IN PEKING.

COMPILED BY ORDER OF THE BOARD OF INTERIOR AFTER THE DIVISION INTO THE PRESENT POLICE DISTRICTS.

(Translated from *Cheng Chih Kuan Pao* of Sept. 1, 1908.)

Precincts.	Districts.	Principal Families.	Additional Families.	Total Families.
Central Precinct of the Inner City	First	1,873	1,658	3,531
	Second	1,637	1,136	2,773
	Third	1,160	940	2,100
East Precinct of the Inner City	First	2,453	1,662	4,115
	Second	5,132	3,164	8,296
	Third	3,839	3,189	7,028
	Fourth	5,831	4,014	9,845
	Fifth	3,891	3,545	7,436
West Precinct of the Inner City	First	3,864	2,872	6,736
	Second	4,773	3,391	8,164
	Third	3,428	2,362	5,790
	Fourth	4,185	2,970	7,155
	Fifth	3,254	2,786	6,040
East Precinct of the Outer City	First	3,288	2,137	5,425
	Second	2,660	2,390	5,050
	Third	2,024	2,754	4,778
	Fourth	796	762	1,558
	Fifth	2,328	3,528	5,856
West Precinct of the Outer City	First	2,983	2,139	5,122
	Second	3,382	1,779	5,161
	Third	2,162	2,369	4,531
	Fourth	2,596	1,969	4,565
	Fifth	2,040	2,913	4,953
Total Inner and Outer Cities		59,579	56,429	126,008
Total in Tartar City				79,009
Total in Chinese City				46,999
Total number of persons at 5.5 per family				693,044

Mr. Rockhill also enclosed an official statement of School Statistics for the City of Peking. The table is too long to reproduce in its entirety, but it seems worth while to give the summary for the whole city, though it does not bear directly upon the question under discussion. Total of the Inner and Outer Cities:—

Boys' schools	183
Girls' schools	17
Scholars, boys	16,282
Scholars, girls	771
Teachers, men	1,200
Teachers, women	100
School officers, men	199
School officers, women	16

It would appear from these figures that the schools of Peking are not overcrowded and that the teachers are not overworked. This table is certainly a sad commentary on the condition of education in China, even if the population of Peking is only 693,044, as Mr. Rockhill states, rather than the million and one-half or more ordinarily given.

C. W. D.